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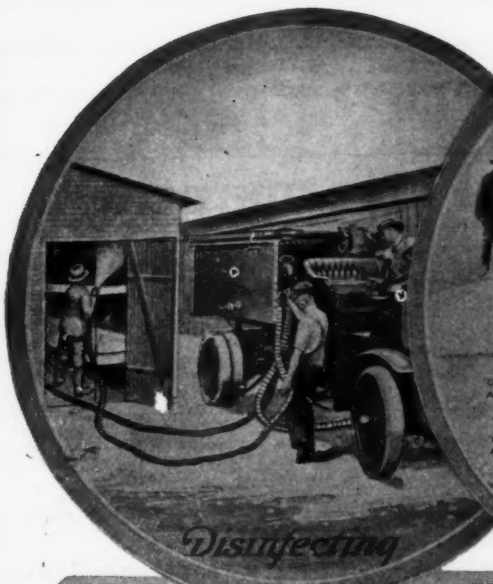
WEEKLY

VOLUME XLV
No. 20

November 16, 1918

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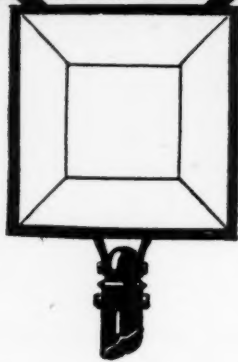
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NEW YORK, NOVEMBER 16, 1918

No. 20

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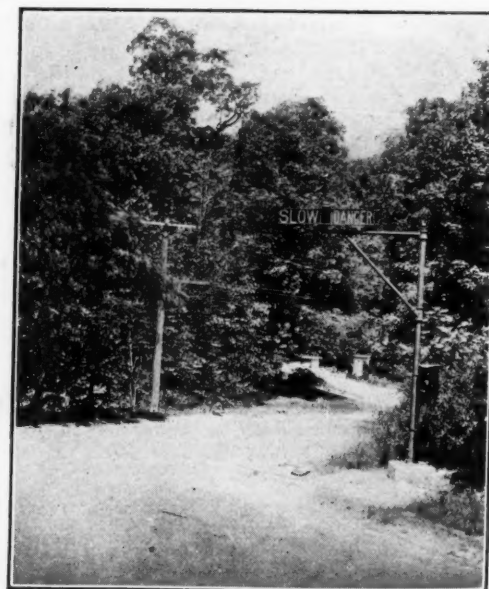
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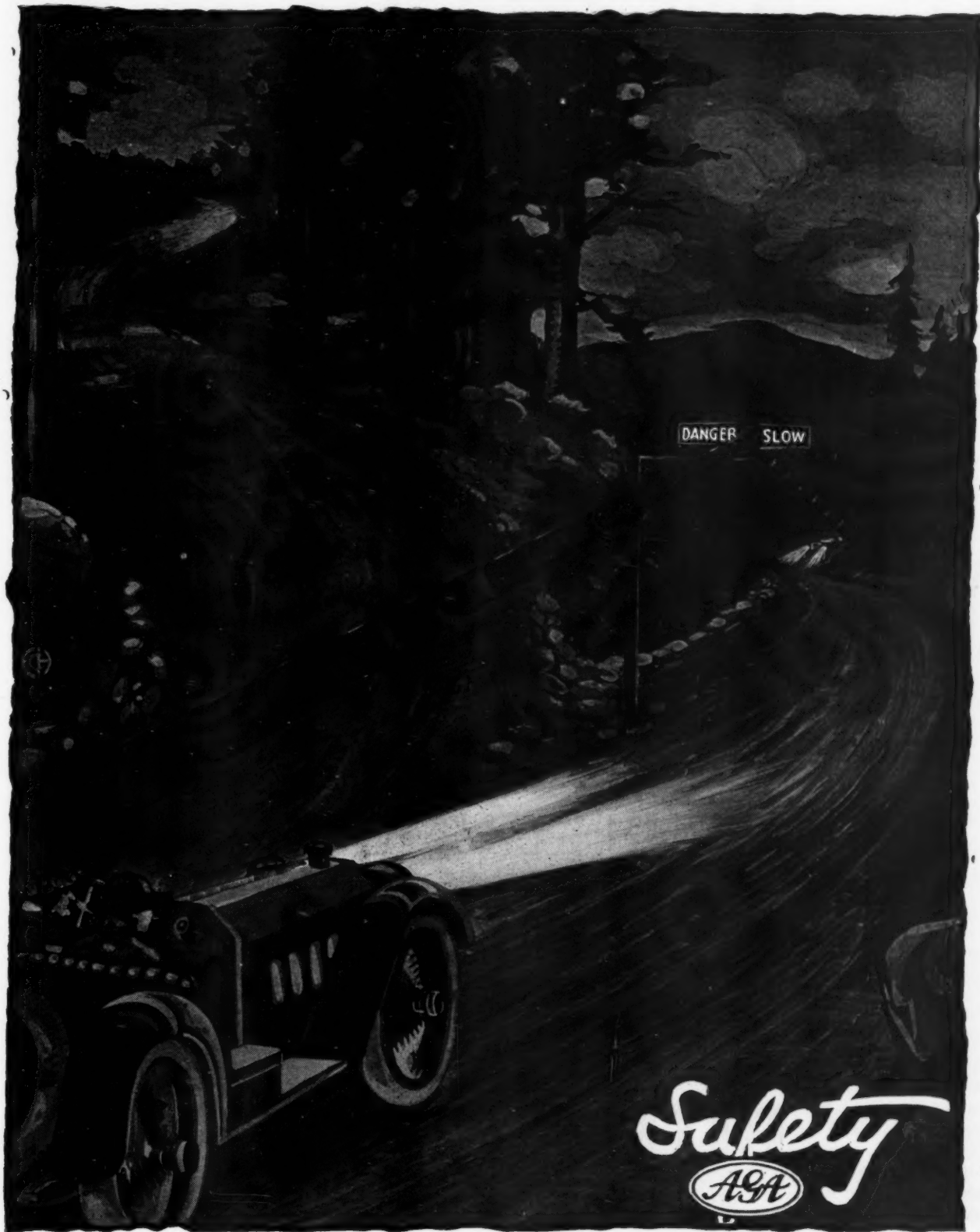
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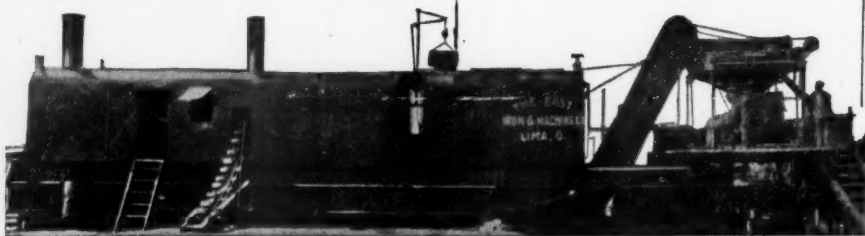
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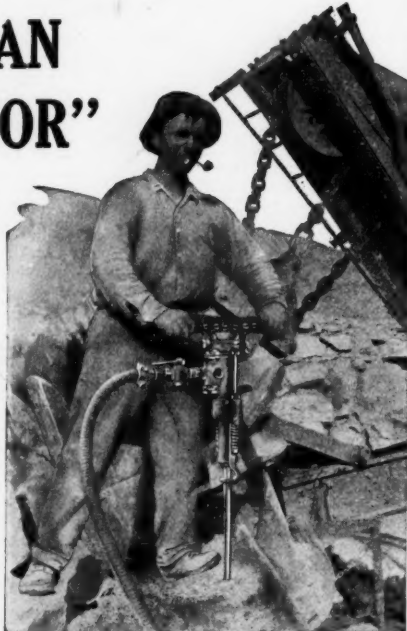
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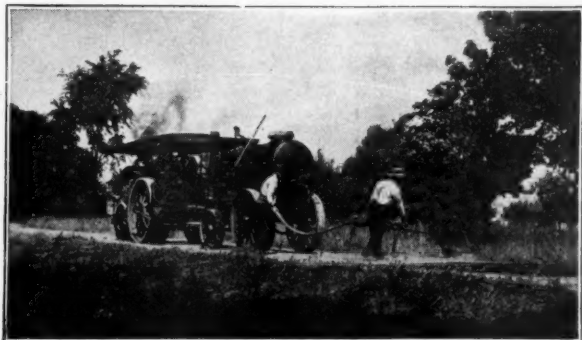
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EPIDEMICS

After the FLU — What ?

The toll exacted by the epidemic sweeping the whole country is beyond human reckoning.

Years may pass before the United States is again visited by this terrible scourge, but

- If it was known that Spanish Influenza would again ravage our cities and towns,
- if it was known that effective means had been discovered to combat this dread menace,

public sentiment would demand that
they be employed—whatever the cost

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Municipal Journal

Volume XLV.

NEW YORK, NOVEMBER 16, 1918

No. 20

REFUSE COLLECTION IN SPOKANE

**Motor Trucks Used for Collection in the Residence and Business Districts, and for Collecting Light Rubbish
—Horse-Drawn Wagon for Collecting Ashes.**

By ARTHUR E. PETERSON.

Although the amount of waste that is required to be collected in Spokane, Wash., has been reduced very considerably by the general observation of Mr. Hoover's requests, other conditions have made it even more important than before in Spokane, as in most cities, to reduce as far as possible the amount of labor required in making such collections.

The largest of the vehicles used in collecting is a three-ton Packard with a box of five cubic yards capacity, rear automatic dumping. This truck has displaced three teams and eliminated three men. It travels an average of something over twenty miles each day. It is used in the residence district for collecting both ashes and garbage, being provided with a movable partition so that the ashes can be kept separate from the garbage

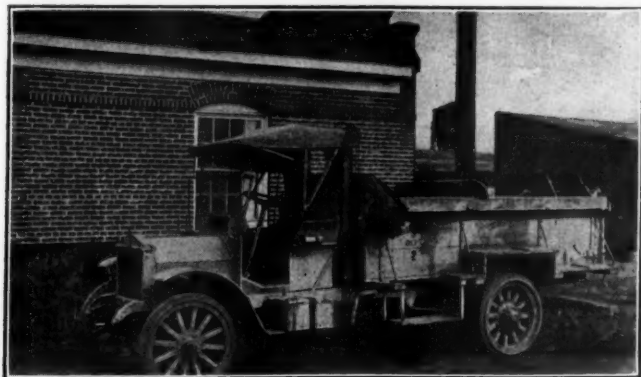
and yet both be collected at the same time. It is built with a low-hung body provided with steps so that the loading is made both easy and rapid. The ashes are carried in the rear compartments and are dumped on the nearest waste ground available for this purpose, while the garbage is delivered to the incinerator (described in Municipal Journal for Jan. 5, 1918). Waterproofed canvas is used for covers to the truck. The truck is manned by three men—a driver and two loaders.

A "Federal" two-ton truck, automatic rear dumping, capacity $3\frac{1}{2}$ cubic yards, is used in collecting ashes and garbage from the business district. This is operated under the same conditions as the Packard and averages eighteen miles a day.

A Smith "Form-a-truck," three yards capacity, is used



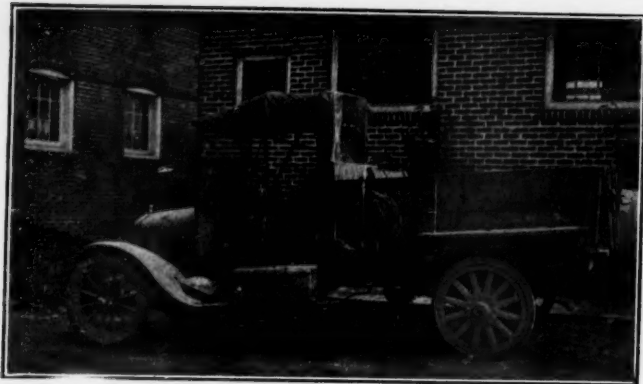
THREE-TON TRUCK USED FOR COLLECTION IN THE RESIDENCE DISTRICT.



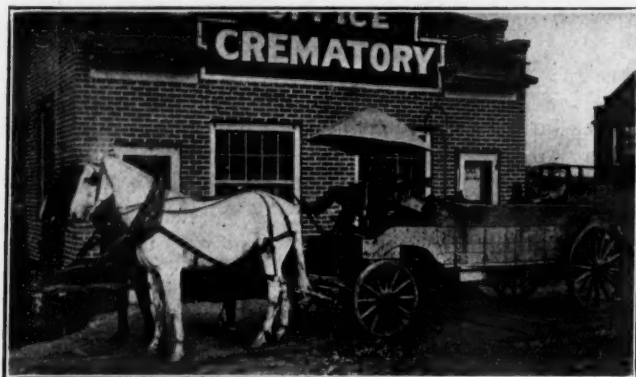
TWO-TON TRUCK USED IN BUSINESS DISTRICT.



THREE-YARD TRUCK USED FOR COLLECTING LIGHT RUBBISH.



TWO-YARD TRUCK USED IN EMERGENCY WORK.



BOTTOM-DUMP ASH WAGON.

in collecting paper and light rubbish. This truck, when operated on paved streets, displaces two teams and eliminates two men. It is manned by two men and averages eighteen miles a day. It is provided with a canvas cover. Another Smith "Form-a-truck" of two yards capacity is used in emergency work such as picking up small animals, decomposed waste, etc. The crew with this truck also opens and closes cesspools, cleans out drain pipes, and does any disinfection work that may be required. This truck is manned by two men. It averages thirty-five miles a day.

For collecting ashes, the city uses a bottom-dumping type of horse-drawn wagon with a capacity of 3 1/3 cubic yards.

WATER SUPPLY DEVELOPMENT FOR HAMPTON ROADS.

The War Department has arranged to spend \$1,800,000 in the development of a water supply at Hampton Roads, Va. Also \$1,100,000 to increase the water supply for the various Government activities in the vicinity of Newport News, \$600,000 for increasing the supply for Langley Field and Fort Monroe, and \$150,000 for additions to pumping station No. 2 at Newport News will be spent jointly by the War Department and the Navy Department.

The Hampton Roads project includes raising the dam at Lake Cahoon, additional pumping equipment at Lake Cahoon pumping station, installation of additional pipe between Lake Cahoon and Lake Kilby pumping station, enlargement of the filtration plant at Lake Kilby, additional pumping equipment at Lake Kilby pumping station,

additional supply main from Lake Kilby pumping station to Portsmouth pumping station, additional reservoir and pumping equipment at this station and a 24-inch main leading from it to the vicinity of the Navy Yard, with a 20-inch main across the rivers and Berkley to connect with the Norfolk distribution system.

The project for Newport News is known as the "Hardwood's mill" development at Orianna, Va. The supply for Langley Field is known as the "Big Bethel" development.

A SANITARY SURVEY OF A CITY.

Water Purification Plant—Houses Not Connected to Sewers—Drop Manholes—Result of Lack of Sewerage Plans—Garbage Collection.

(Concluded from page 361).

WATER SUPPLY.

The water supply of the city is derived from the river that flows through it, the intake being located at a point near the upper boundary of the city. This river has a water-shed of 1,550 square miles of mountainous and rather thinly populated territory. There are, however, several fairly large towns with municipal water supplies and sewerage systems located directly on the bank of the river. It is estimated that there are at least 62,000 persons living within the drainage area. Examinations of the river for miles upstream have shown its waters to be heavily polluted before they enter the city. While none of the municipal sewers empty into the river above the waterworks intake, there are two small runs draining an extensive unsewered area which is thickly populated. A large municipal sewer has its outfall about 1,100 feet down stream and it is highly probable that at times of high water in the river, wastes from this point are backed up as far as the waterworks intake. Thus it is seen that the source of supply is always polluted to a greater or less degree, becoming at times a source of most extreme danger. Only the most thorough filtration and after-treatment can render a water of this character uniformly safe for drinking purposes. Unfortunately the skilled attention that is absolutely essential for the successful operation of a filter plant has not been had until recently.

Purification is secured by coagulation and sedimentation, followed by filtration through so-called mechanical or rapid gravity filters and final treatment with chlorine gas. The water flows by gravity from the intake well in the center of the river to a concrete suction well on the bank, whence it is lifted to the sedimentation basins and filters by low-lift centrifugal pumps. There are three



THREE-TON TRUCK BEING UNLOADED.

units in this system, one driven by a steam turbine and two by electric motors. Just before entering the sedimentation basins, the water receives its dose of coagulant consisting of lime and sulphate of alumina in amounts depending upon the character of the river water as shown by its alkalinity and turbidity.

The man who installed the original hypochlorite plant for final treatment of the water painted its virtues so very bright that he assured the water company that when the river was clear they need not use any chemicals except hypochlorite of lime. It is felt that this ill-advised suggestion may have been in part responsible for the epidemic of typhoid fever the city has just experienced.

The sedimentation basins are two in number, each having a capacity of about 238,000 gallons. At the normal rate of filtration this provides for but one and three-fourths hours storage, a period that is considered far too short to be comparable with adequate coagulation and sedimentation. The control of the chemicals constitutes another objection. The solutions are prepared in large tanks from which they are fed through hand-operated orifices and the rate of dosing is recorded as inches in depth of the tank per hour. Constant-feed, calibrated orifice boxes should be supplied, that the dosing may be more accurately controlled.

From the sedimentation basins the water flows by gravity to the filters, of which there are ten units, each having a superficial area of 230 square feet. At a normal rate of two gallons per square foot a minute, or 125 million gallons per acre per twenty-four hours, the ten units have a combined capacity of about 6.5 million gallons a day. As originally constructed, each unit was provided with a loss-of-head gage, rate controller, and individual sampling pump, all of which equipment has now been dismantled. A loss-of-head gage is essential if accurate knowledge of what each unit is doing and of the proper time to wash is to be had. As it now is, the filter man guesses at the proper time to wash the dirt out of the filter by the position of the inlet float; the dirtier the sand, the higher the level of water on the bed and the more quiet the float—a rather round-about method.

After washing, the filters are allowed to waste for a short time and then turned into the clear well. The lack of any rate controllers on the filters makes it certain that the most recently washed units will be filtering far in excess of the rate for which they were designed. Rate controllers would prevent the units from delivering more than a definite maximum at any time. With as small a



DROP-MANHOLE IN LARGE SEWER.

clear-well as the one here provided (approximately 37,000 gallons), the lack of this important device becomes even more dangerous in that the pull of the high-service pumps is thrown almost directly upon the filters.

The lack of devices for collecting samples of the effluent of each unit is not a serious matter, though it is always well to be able to determine just what each filter is doing.

Washing of the filters is effected by forcing water and air through them from below. The water for washing is taken directly from the clear well by an electrically driven centrifugal pump. As has been previously noted, washing can not be conducted on anything like a scientific basis owing to the lack of loss-of-head gages. The filters are, however, washed at least once a day, and more often if deemed necessary.

From the clear-water well, which is located beneath the filters, the water flows to the high-service pumps, receiving on the way a final treatment with chlorine. Chlorine gas is an excellent sterilizing agent in water, and small doses can effect a remarkable reduction in the number of bacteria present. The chlorine gas is introduced by a direct-feed manual-control chlorinator. In this plant the fact that the dose is not automatically controlled is extremely unfortunate, and if the plant were not in the hands of a skilled filter operator would be a very serious objection.

The high service pumps discharge directly into the distributing system. For fire purposes, a reservoir of about 1,000,000 gal-



TYPE OF WAGON USED FOR HAULING GARBAGE.

lons capacity has been constructed on the hill near the pump house of such an elevation as to afford 90 pounds pressure on the hydrants in the business district. This reservoir is normally disconnected from the distributing system, as the pressure in the city is maintained at a lower point. Thus it is seen that the high service pumps can not be operated at a constant rate as there is no way of taking up the excess pumping when the water delivered exceeds the draft, or to supply sudden demands if operating at too low a rate. The result is that the rate of pumping varies within wide limits throughout the day. The application of the coagulants and chlorine is, however, based upon the mean rate of pumping, with the result that at times the water has undoubtedly been untreated. Here again may be a factor in the cause of the outbreak of typhoid referred to above. An automatically controlled chlorinator would obviate this difficulty but a manual apparatus can be perfectly effective if watch is kept on the recording Venturi meter that shows the amount of water handled by the high-pressure service pumps, and the dose of chemicals varied in proportion.

In addition to the brick and concrete reservoir for fire purposes are two small reservoirs of steel for supplying the higher districts. Water is elevated to these tanks by small electrically operated booster pumps.

The operation of the filter plant is now in the hands of a skilled bacteriologist who has already had considerable experience in filter operation. A thoroughly equipped modern laboratory has been provided, and it is probable that any defects in design of the present filter will be minimized in his hands and that the city will be supplied with a uniformly safe drinking water.

"With a safe and potable water available, there is no excuse for the continuation in use of the 189 private wells in the city. While no analyses have been made to learn the extent to which the wells are polluted, there can be little doubt from their location and construction that many of them are dangerously contaminated. Commonly, drilled or bored wells, on account of their depth and general constitution, are more apt to be safe than are the old-fashioned dug wells. Unfortunately, many of the drilled wells, which are about equal in number to the dug wells, are in no way protected against surface drainage and are liable to serious contamination at almost any time. No generalization as to the character of well water in the city can be drawn. The city chemist should examine every well in the city at frequent intervals and those found contaminated should be closed against further use. It is my opinion that it would be wise to require the abandonment of all wells in those areas where the city water supply is available. In a thickly built-up community there is no telling at what instant a well which has always shown up safe may become infected with disease-producing bacteria. The city water mains should be extended as rapidly as possible until there be no need to use well water in the city."

SEWERAGE SYSTEM.

The mere construction of a sewerage system does not insure sanitary conditions in a city, but all buildings should be connected to it. But even where all of the residences in the city are connected to the existing system, if it is not properly maintained, some parts of it may be in such condition as to nullify to a greater or less extent the benefit that should result from it.

"In 1906 a competent consulting engineer prepared careful plans for sewerage of the portions of the city not then served. These plans have, I understand, been very largely ignored in recent construction and it is probable that a new set of plans should be prepared to take care of any modifications that may be required by the new

conditions." It is stated that in preparing these plans consideration was had of the possibility of having to treat the sewage in the future and that increase in cost of construction thus entailed caused some of the designs to be modified. Should treatment become necessary, this constructing of sewers in disregard of the plans will be responsible for extremely costly changes. Though the first cost of separate systems is usually greater, it is nearly always wiser for a city to construct her sewerage system with a view to ultimately conducting the sewage to a single point for final treatment and disposal; and conditions are now developing in the city in question that indicate the early necessity of constructing intercepting sewers to prevent pollution of the river that now receives the sewage of the city.

A careful and rather extended field survey of the sewerage system was made in connection with the report. For the most part the sewers and their appurtenances appeared to be in good condition, but several rather serious faults in design were noted and the maintenance of them calls for some criticism. It is generally conceded that one of the fundamentals in sewer design is that all sewers not amply large to permit a man to walk through them should be straight between manholes, as this permits an examination of their condition, and more important still, allows them to be cleaned easily with sewer rods and scrapers. Contrary to this principle, several of the sewers make quite sharp angles before entering the manholes.

A second serious criticism made is that of the so-called "drop manholes." When a sewer at one level enters that of a lower grade, it is the practice in this city to let the sewage fall in the manholes, as shown in the illustration. "While this is not good practice, even in large manholes such as that in which this photograph was taken, in that the falling sewage roughens the invert and retards the flow of the liquid, it is even poorer policy in the smaller manholes. In every small manhole examined that was used as a drop manhole, it would be impossible for a workman to inspect or clean the lower pipes without being drenched with sewage. In some of the manholes the sewers at the higher levels discharged directly through the rungs of the ladder, assuring a wetting to anyone attempting even to enter the sewer, much less stooping to clean it. The cost of constructing properly designed drop manholes is only a little greater than the type now in use."

A number of connections between comparatively small sewers and the large sewers, where the entrance was made between manholes, were examined. Almost without exception the connection was very carelessly made. In nearly every case the smaller sewer was at a higher level than the interceptor, necessitating a sharp dip in the former in order to effect a connection. Instead of being made through curved pipes, the dip was frequently obtained by placing straight lengths together at an angle and then preventing a cave-in by laying a few iron rods and bricks over the opening at the joint. Some of these connections have failed, practically blocking the small sewers, with the result that the sewage, instead of entering the interceptor as intended, is seeping away through the ground, probably following the line of the big sewer through the comparatively loose earth of the back fill.

Some of the interceptors have been constructed at such considerable depths that the contractor has found it less expensive to tunnel than to carry on construction in open cuts. Back-filling after the completion of a sewer in a tunnel is a difficult task and has not always been done thoroughly, with the result that earth around the sewers has been comparatively loose and easily permeable to water. At times of floods in the river, the

ground water level rises considerably, and when the river falls this water must run off and naturally seeks the line of least resistance, which is the loose back-filling along the sewer. In running out, it takes with it the fine soil and finally the larger particles, until the street is undermined and caves in. As indicated by the hollow sound, there are several points in the city where the pavements are more or less undermined. In one instance it was possible to look between the sewer and the wood sheathing of the tunnel in which the sewer had been laid as far as the rays of the electric torch would reach in each direction. When this wood rots away, fine sand will settle down to the sewer and be carried away by the ground water, causing additional street settlement. Moreover, if one side of the tunnel should fail before the other, there is a possibility that the sewer will be pushed out of alignment and broken. There is also the chance that water flowing through the open space around the pipe may undermine it at points, causing settlements which will permit suspended matters in the sewage to collect at various places and decompose.

Several of the older sewers were laid on flat grades provided with automatic flush tanks to prevent deposits. Five of these flush tanks were examined and only one of them was found to be in proper operation. Water was shut off from two of the tanks, being entirely disconnected in one case; in one tank the bell was off of the siphon, while in the fourth the apparatus was so placed that siphoning was impossible.

Breaks in sewers are not always repaired immediately, but they should be because of the possibility of a break clogging the sewer. An unaccountable hollow in a stone block pavement in one of the principal streets of this city was found upon investigation to be due to a partial collapse, immediately beneath it, of the roof of a large sewer. In another case, in order to drain a low piece of land, a hole was dug down to the sewer and the pipe broken open, instead of putting in a catch basin and connections as should have been done. The result, of course, is that heavy rains wash earth and other material down into the sewer and may readily carry in sticks or other matters that will block the sewer.

"A final comment is due to the lack of plans in the engineer's office. Every city should have complete plans of its sewerage system. The need of such drawings is clearly evidenced when it comes to making house connections. As it is now, a plumber cannot go to the engineer's office and obtain accurate information as to the location of the Y's in the street sewer, or, in many cases, as to the location of the sewer itself. The result is that when a plumber wishes to connect a new house to the city sewer he many times runs his trench to the street by the most direct route and knocks a hole through the city sewer wherever he happens to meet it.

"If detailed plans of the sewerage system had been in existence, it is probable that the accident shown in the illustration never would have occurred. The railroad, in abolishing a grade crossing, was obliged to carry its tracks on pile foundations while excavating underneath. Lack of accurate knowledge of the exact location of the sewer in relation to the curb line was responsible for four piles being driven through an expensive 56-inch segmental-block sewer."

GARBAGE COLLECTION AND DISPOSAL.

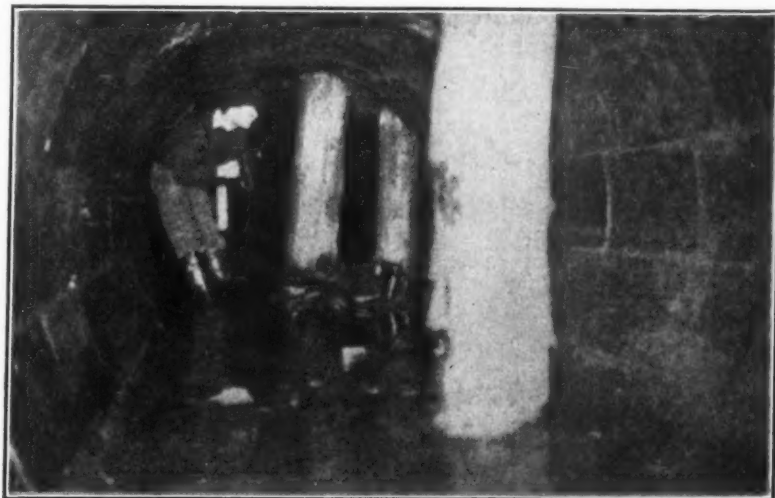
"The collection and disposal of garbage are problems that demand expert engineering supervision that they may be handled in a

sanitary and economical manner." The garbage problem of this city very evidently never received such attention, or any attention at all. The crematory is incapable of handling more than a small portion of the city's garbage, and the collections are so haphazard and without system that it would scarcely be worth while to attempt to operate a properly designed destructor were one available.

The garbage is collected by hog raisers who are apt to empty only those pails that contain fair amounts of food suitable for pigs, and the housewife who is careful and makes good use of the table scraps must either pay the city garbage collector or a private one ten cents or more to empty the pail, or else tolerate an evil-smelling and fly-breeding garbage can at her back door as the price of her thrift. Moreover, the collection is conducted in an insanitary manner, all of the carts, whether owned by the city or by individual collectors, being ramshackle affairs that permit the garbage to be scattered on the streets and afford no protection against flies.

It is claimed that city garbage wagons will call for garbage whenever notified by telephone, but it appears to be the common experience that three or four days are apt to elapse before the wagon arrives. Since ten cents is charged for emptying a can, whether entirely full or partly so, the calling for the garbage wagon is generally delayed until the can is full, when a further delay in the arrival of the wagon results in insanitary conditions. Moreover, the method is extremely wasteful of energy, since a driver frequently travels a mile or more to collect a single garbage pail. A system should be adopted in which some care and skill is used in districting the city and routing various collectors. The solving of this problem should be placed in the hands of a trained engineer if it is to be properly met. "Reference has been made to the inadequacy of the crematory. Unfortunately a large proportion of the small garbage crematories constructed in this country five or more years ago were poorly designed affairs that, in addition to being extremely costly to operate, have commonly been a great source of nuisance. I have seen many such plants, but the one in ——— is the most poorly designed of them all. In fact, its design is so very bad that I would advocate its entire abandonment unless possibly it might be found that the chimney could be used if it were deemed advisable to build a second destructor at the same point."

"If anyone needs ocular evidence of the evils that result from inadequate collection or no collection service at all, I would suggest that they visit back alleys in almost



PILES DRIVEN THROUGH SEWER AS A RESULT OF LACK OF PLANS OF THE SEWERAGE SYSTEM.

any portion of the city. The alley between W. street and E. avenue used to be as good an example as any. Here some of the householders on both streets make a practice of dumping their garbage over the back fence and the alley is always disgusting in its appearance, and during warm, rainy weather the odor of decomposing swill is noticeable for a considerable distance. I have frequently seen slime in this alley eight to ten inches deep. Another common use of the alley is for the burning of waste paper and other refuse and as a depository for tin cans and broken bottles. The burning of trash is done regardless of the wind and constitutes a fire hazard that should be controlled by the city police."

Whatever system of disposal is adopted, the city must provide for a proper system of refuse collection which should be made at regular intervals in covered, watertight wagons, so designed as to be readily and easily cleaned. If the garbage is to be fed to hogs, the housewife must be required by law to put garbage only in the garbage can, and the construction of the can also should be a matter of legal requirement. It is common practice for the housewife to endeavor to slip in a tin can or broken bottle as the easiest way to get rid of it. Tin cans may not do much harm, but bits of glass certainly cannot be considered good for a hog's digestive apparatus. As for the construction of the garbage cans, one of the main objects of any system of collection is to prevent the existence of insanitary conditions, and the use of uncovered, leaky kettles or buckets as garbage collectors defeats this very purpose.

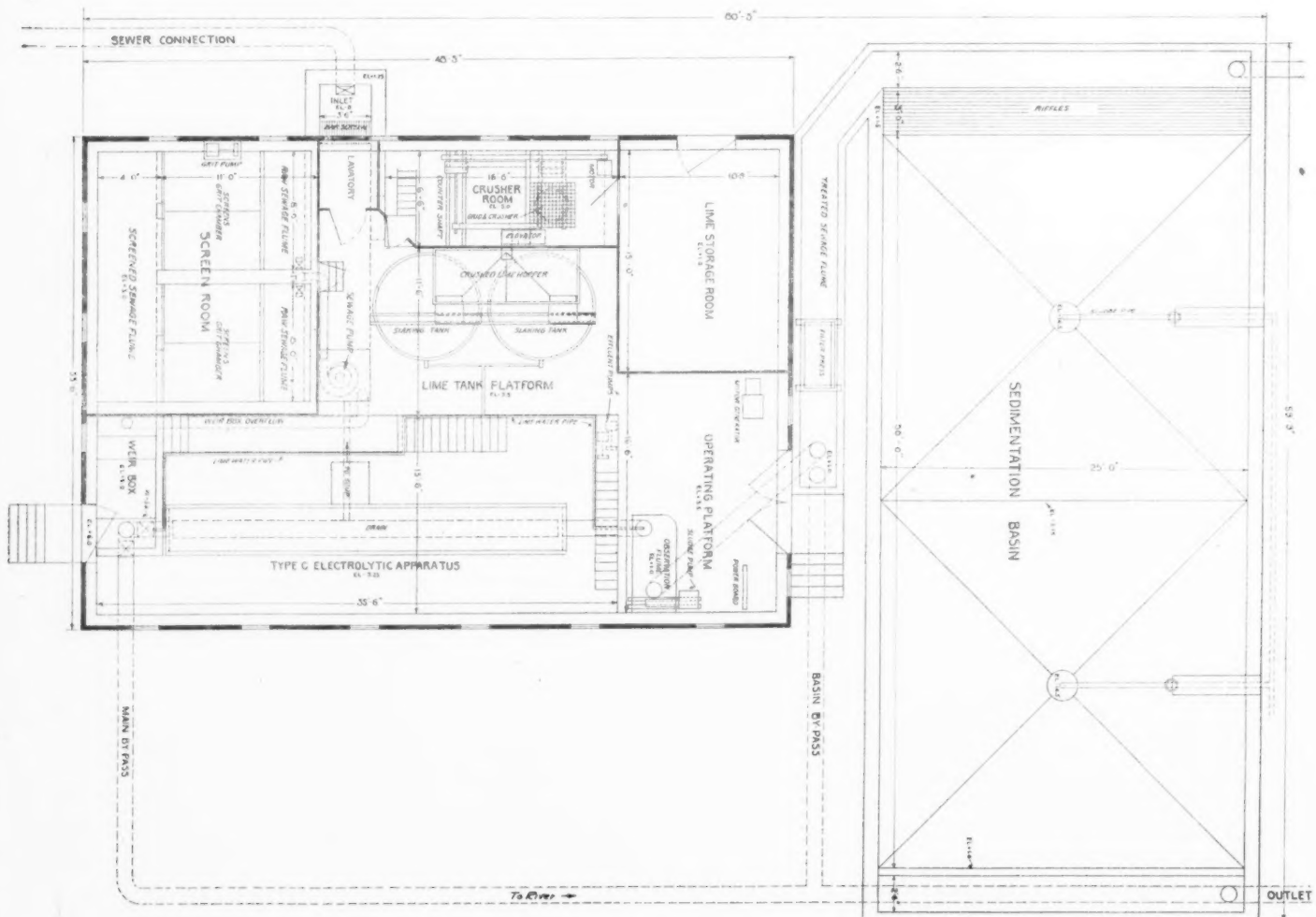
SEWAGE TREATMENT IN EASTON.

Demonstration Plant of One Million Gallons Capacity, of the "Direct Oxidation" Type— Details of Plant and Method of Operation.

Eleven years ago the Pennsylvania State Health Department informed the city of Easton that it would not be permitted to construct any more lines of house sewers until it had provided a plant for treating its sewage before discharging it into the Delaware river. No definite measures have been taken by the city since that time for constructing a sewage treatment plant, the nearest approach to that being the operation of a demonstration plant treating a part of the sewage of the city. This plant has been treating at an average rate of about 850,000 gallons a day since last May. The population of the city is about 30,000, but probably not more than 20,000 are at present connected with the sewer system, so that the total house sewage flow is probably less than 2,000,000 gallons a day. It would seem probable that a plant of three times the capacity of this demonstration plant would be of ample size for treating the sewage from the entire population.

The demonstration plant is of the "Direct Oxidation" type, utilizing electricity to produce oxygen directly in alkaline sewage by the decomposition of the water of the sewage.

One of the features of the plant which has especially impressed the citizens of Easton, is the entire absence of odor or other objectionable features. The plant is



PLAN OF DIRECT OXIDATION SEWAGE TREATMENT PLANT AT EASTON, PA.

located on the river bank at the foot of a street lined with the highest class of residences, the nearest of which are less than one hundred feet distant, and is immediately adjacent to a public park. The occupants of these residences and others living in the vicinity express no objection to having the plant located permanently at its present site.

The building enclosing the plant is a temporary structure, rising ten or twelve feet above the ground and neatly painted. If the plant be made permanent it would possibly be advisable to give it a more ornamental housing—possibly concealing its character by giving the building the appearance of an ordinary residence. The foundations and structure below ground are of concrete, and suitable for permanency.

Entering this building from the street, the treating apparatus is seen in a basement several feet below the street level, the apparatus consisting of a long enclosed tank of wood, reinforced with metal. At the left of this, a little above ground level, are duplicate tanks for slaking the lime: while above these, extending through the ceiling, is a hopper for holding crushed lime. There is a slight odor of the slaking lime but no other odor is perceptible in the room.

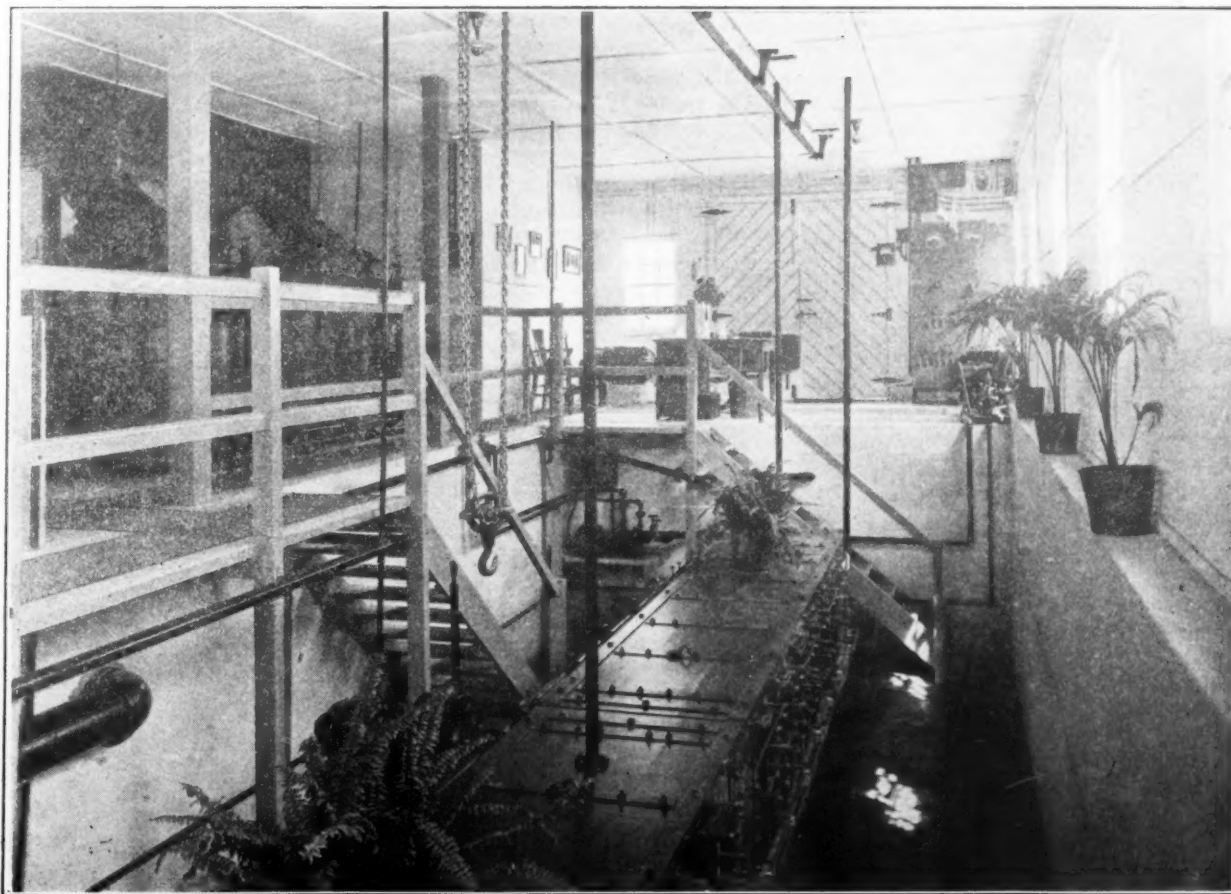
In one corner of the basement the sewage discharges into a suction well, a screen being located here for removing sticks and other large objects from the sewage. A five-inch centrifugal pump lifts the sewage and discharges it onto a one-quarter inch perforated plate screen. By running a brush over this screen occasionally, any particles of organic matter are forced through the openings and reduced to small dimensions, except grains and hops discharged into the sewer by a brewery a block away, and hard matters like sticks, corks, etc. These

matters that do not pass through the screen are small in quantity and are removed daily and buried or burned. From this screen the sewage flows over a weir and through a pipe to the treating apparatus.

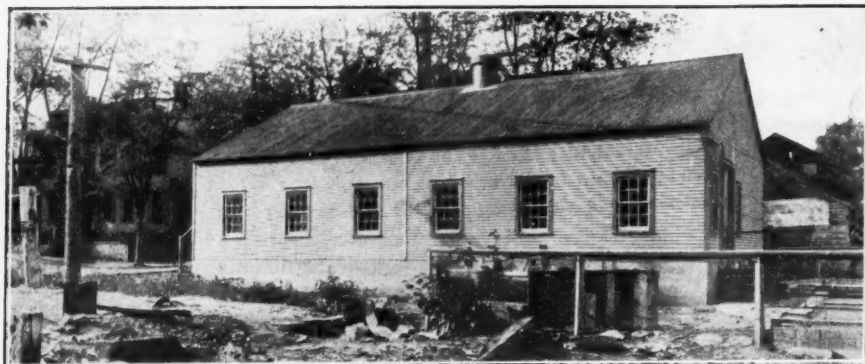
At the ground level is a lime storage room, and at a slightly lower level is a lime crusher, the latter discharging into the boot of an elevator which lifts the crushed lime into the hopper before referred to. From the hopper the lime is fed into the slaking tanks by a worm feed that can be adjusted to any rate of discharge desired.

In the slaking tank, water and lime are thoroughly mixed by agitation. The lime solution flows by gravity through an iron pipe which discharges it into the sewage just below the weir. Another pipe leading from the slaking tank discharges the lime solution into the pipe carrying the effluent from the oxidation apparatus. These two pipes are controlled by valves so that the lime solution may be discharged through whichever one the operation may indicate as the more desirable. For purposes of economy, sewage effluent is used in slaking.

The treating apparatus consists of twenty-two banks or sets of plates, each bank containing forty-eight rectangular plates 10 inches by 16 inches by $\frac{3}{16}$ of an inch, set vertical and spaced $\frac{3}{8}$ inch apart. This gives 1,056 plates, with a surface area equivalent to 900 square feet. The electric current passing between these plates through the alkaline sewage (which serves as an electrolyte), causes the formation of atomic or nascent oxygen at one plate and hydrogen at the other. (This is the same action that takes place in charging a storage battery and in commercial production of oxygen and hydrogen.) The sewage meantime is flowing between these plates, and between each two plates paddles revolve which ensure contact of the sewage with the oxygen and hydrogen



INTERIOR VIEW OF SEWAGE TREATMENT PLANT.
Taken from near lower left-hand corner of building, as shown in plan on opposite page.



BUILDING HOUSING TREATMENT PLANT.

Street at left is lined with high-class residences. Tanks just show at extreme right

while these are in their active state, and prevent clogging of the plates.

Direct current, produced by a motor generator set, is employed for electrolysis, and the amount used averages 50 volts (a little over 2 volts per bank) and 40 amperes. This current is utilized 22 successive times by connecting the banks in series. The amperes vary automatically from 30 to 60, depending upon the conductivity of the sewage, which is increased as the domestic sewage becomes stronger.

The watt meter connected with the motor that operates the paddles gives readings varying from 1,500 to 2,200, increased resistance being caused by a concentration on the plates of the crystalloids of calcium carbonate resulting from electrode passivity. When the watt meter reading passes 2,200, the current may be reversed so as to pass in the opposite direction, and in a few minutes the faces of the plates are cleaned of deposits. The higher reading of the watt meter indicates a condition of the electrodes permitting the production of oxygen without its attacking them, and the lime solution can then be fed into the outlet of the machine for the purpose of aiding coagulation.

The lime feed is operated by a one-h.p. motor using about 0.5 h.p., and about the same power is used for pumping the effluent into the slaking tanks. (Pumping of the sewage is necessary at this plant because of its location, and is not considered as an essential feature of it, as it is adapted to gravity flow.) Power used for all other apparatus (all the power being obtained electrically) totals about 6 k.w. or 144 k.w. hours per million gallons, at full capacity. The lime used is that known as agricultural lime tailings and is said to cost \$6.25 a ton. The amount used for the Easton sewage has averaged about one ton of this low-grade lime (56.25% CaO), per million gallons treated, although it varied with the chemical composition of the lime, higher grades requiring less quantity.

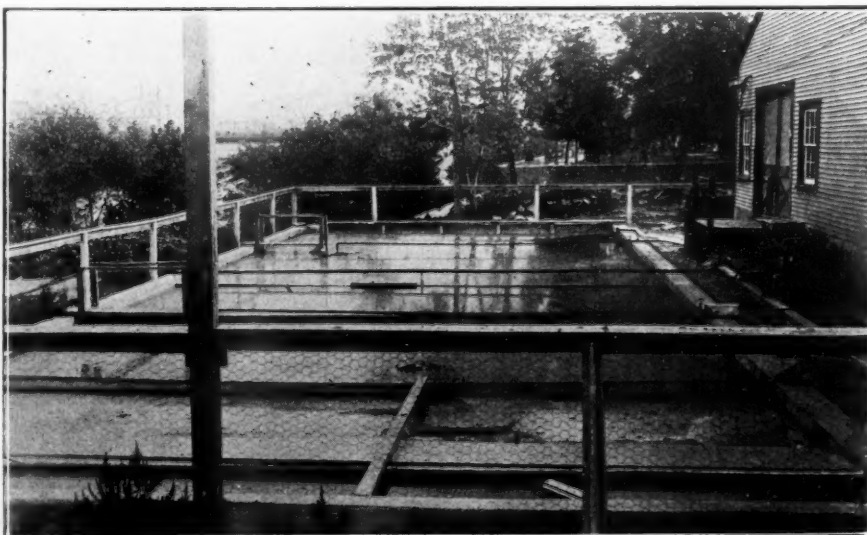
A switchboard in the rear of the room near the desk of the operator, with the various meters and indicators, permits ready control of the operation. At one side of the operator's desk is a short open flume through which the effluent from the apparatus flows and from which samples of the effluent are taken from time to time to keep track of the operation. The operator states that when the quantity of lime added to the sewage is insufficient to produce free alkali, the coagulation produced in the effluent is poor and settles slowly, but when free alkali is present there

is an abundant coagulation, which settles rapidly, leaving a clear, supernatant liquid, and, if the current is on, proper operation is ensured. Insufficient lime is at once indicated by the appearance of the apparatus effluent, which should contain an excess of 30 parts per million of lime expressed as CaO. The effluent passes to an outdoor settling tank, passing over a flight agitator in entering the tank, which facilitates the escape of gas from the sewage, none of which gas, however, has any perceptible odor. From the settling tank the effluent is discharged into the Delaware river and apparently causes no discoloration of the water, no deposit in the river, nor any other possible kind of nuisance.

To demonstrate its dewatering properties, the sludge collecting in the bottom of the settling tank has been drawn off onto a small sludge bed, where the liquid rapidly drains away and in a few hours the sludge is solid enough to handle, and has no perceptible odor whatever except that of lime. During the operation of the plant the past summer this dried sludge was thrown out onto the ground and was removed at once by neighbors, who considered it a valuable fertilizing material for their war gardens.

Though the river was low for the most of the summer and the discharge pipe entirely out of the water, the sludge from the sedimentation tank was discharged intermittently directly into the river along with the effluent. Generally, however, the sedimentation tank was bypassed and the effluent from the apparatus discharged directly into the river, the object being to determine whether or not an offensive deposit would accumulate. This was done because it was claimed that repeated analyses showed that a high degree of oxidation was afforded by the process. There is no offensive accumulation evident, which is proved by the fact that the stones supporting the outlet pipe have been used as a mooring-place for row boats by citizens using the river during the summer.

If the continual discharge of this effluent and sludge into the river is permissible, the sedimentation tank might be altogether dispensed with and effluent from the apparatus might then be discharged directly into the river.



VIEW ACROSS SEDIMENTATION TANKS; PARK IN BACKGROUND SURROUNDED BY RIVER WALL.

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Municipal Journal's Information Bureau, developed by twenty-one years' research and practical experience in its special field, is at the command of our subscribers at all times and without charge.

GET BUSY ON PUBLIC WORKS.

Having settled that little European affair satisfactorily, let's turn our attention to our home affairs and try to catch up in our back work.

The Federal government has led the way. In less than 48 hours after the armistice was signed definite action had been taken by the War Industries Board and the Fuel Administration looking to the renewal of non-war work. And municipal and other public work has the first call.

On November 12th, the Board gave notice that no permits or licenses will be required for:

"The construction, maintenance, improvement or development by Federal, State or municipal authorities of HIGHWAYS, ROADS, BOULEVARDS, BRIDGES, PARKS and PLAYGROUNDS.

"The construction, extension, improvement, maintenance or repair of any public utility, including WATER SUPPLY SYSTEMS, SEWER SYSTEMS, LIGHT AND POWER FACILITIES, and STREET and INTERURBAN RAILWAYS.

"The construction of new or the alteration or extension of existing SCHOOLHOUSES, churches, hospitals, and Federal, State, or MUNICIPAL BUILDINGS involving in the aggregate a cost not exceeding \$25,000."

All limitations on the production of BUILDING MATERIALS are removed, and one-half of the restrictions on the manufacture of ROAD MACHINERY and numerous other commodities.

The Priorities Division will assist the carrying on of all such work to the extent of giving precedence to activities involved in providing for deferred maintenance, additions, betterments and extensions of public utilities.

No dealers in materials are longer required to exact or give pledges relating to commodities employed in the above classes of work.

All limitations on the use of fuel in the production of building materials are removed, and the Fuel Administration will approve the use of fuel required for facilitating the above classes of work.

It is up to the cities themselves now to turn to the promotion and speeding up of public works the energy

and enthusiasm that, for eighteen months, they have been putting into the prosecution of the war.

The world wondered at the miracle in war activities performed by this energy and enthusiasm.

Turn them to peace activities and equal miracles can be performed.

Get busy on public works.

SHALL THE TROLLEY MAGNATES ABDICATE?

A few days ago about five hundred executives of traction companies, at a meeting of the American Railways Association, discussed a resolution, presented by the president of the Milwaukee Electric Railway and Light Company, that the members put themselves on record as favoring public ownership of all the electric railway lines in the country. The reason offered was that the war had magnified all problems affecting private ownership, such as the increased prices of all commodities and the increasing scales of wages, which threatened the solvency of the companies. One of the members stated that a radical revision of all local franchises is necessary to insure further operation with efficient service. "The remedy for all these conditions is public ownership. Under present conditions all local franchise are valueless," said the president of the United Railways of St. Louis.

This resolution was evidently taken seriously by the convention and was referred to the executive committee. The "Electric Railway Journal" devotes several pages of its November 9th issue to statements of electric railway executives on the question. Several of these held that the railways would have little objection to public ownership, but that it, and especially public operation, would prove disastrous to the future welfare of the country. Others believed that the public were bent on ruining the railways and the only way to preserve the rights of the stockholders was to sell out to the public. Several, especially of those in the larger cities, favored a plan similar to that employed in Cincinnati—service by private companies at cost with a fair return on invested capital, similar to that under which lighting plants operate in Massachusetts, the fares being fixed from time to time by the municipality on the basis of the accounts of the company.

There are very few municipal street railways in this country, and one or two of these are owned and operated under unusual conditions, so that we have few examples of public operation to judge by. (The San Francisco road will be described in next week's issue.) In Canada, however, at least one or two municipally operated complete systems have proved quite successful, judging from their reports, both financial and otherwise. One of the difficulties that immediately suggests itself is that many electric railway systems extend through several cities, while most extend into country districts surrounding the corporate city limits. This would, in many if not most states, introduce legal complications to public ownership.

The question will undoubtedly be raised and discussed more or less widely. It is in line with the assumption, by the Government, of the control of all kinds of utilities as a war measure, and acceptance of the idea has undoubtedly been hastened by the experiences of the past year. With return to peace conditions the agitation will probably die down in many quarters. But it is to be expected that in some it will result in changes of the relation between the public and transit companies. Such changes, however, we anticipate will be treated as local problems, each to be considered on its own merits; and the most satisfactory solutions will be different in different cases.

To mention only two reasons for this, state laws and the transit companies' franchises will impose various restrictions.

But if there is to be no general passing of electric lines from private to public ownership, there seems likely to be a readjustment of relations in many sections of the country, one of the indications of this being the willingness, if not the desire, of the companies themselves to turn over their properties, leaving it only for the people to decide whether they wish to assume the responsibilities. And the peoples of the various cities and states will be wise to investigate thoroughly and consider carefully and long lest they find that, in deciding upon municipal ownership and operation, they have only assumed new troubles without eliminating or greatly diminishing the old.

GOVERNMENT TO FACILITATE WASTE COLLECTION.

The chairman of the War Industries Board, B. M. Baruch, reports that the Government is about to take the action the necessity for which was pointed out by *Municipal Journal* editorially a few weeks ago, namely, assisting the individual to dispose of the materials which it had been urging him to save. The situation is becoming critical, especially with regard to paper, and to the end of securing an adequate method of collection, the war prison labor and national waste reclamation section of the War Industries Board, with Hugh Frayne in charge, has been organized, and a working plan for every organized community, including towns with 5,000 population and the outlying districts to the large metropolis centers, has been formulated, which covers a wide scope and takes care of the organization, collection, disposal, and the prices to be received on all waste materials.

The most important materials desired to reclaim at the present time are paper, cotton and woolen rags, steel, copper, brass, zinc, rubber, tin, leather, lead, tin foil, etc.

It is needless to say that everyone can help at this; children can gather paper and cotton rags, and every family can join in the movement and help the local reclamation council when it takes up the important work. The time to save is now, and with the Government making a direct appeal to every patriotic person to save paper—both new and waste—it is absolutely unpatriotic to allow it to be wasted; and what is true of paper is true also of rags, rubber, leather, and other waste material.

With the organization of the local councils, through the war prison labor and national waste reclamation section, collection and disposal methods will be arranged for everyone—the households, apartments, department stores, office buildings, city, State, and Federal buildings, etc.

Plans in detail will be made public within a short time.

The above information, although received from Washington within the past week, was probably written before the early termination of the war was known, or perhaps, anticipated, and it may be that the plan will not now be carried out. It is to be hoped, however, that it will be. War or no war, the materials so collected can be put to valuable use, and the saving of them should be encouraged in every way. Moreover, having urged the people to save these things, the government should not give them the feeling that all their efforts now are wasted, but should assist them in carrying to a useful conclusion their efforts in national thrift.

If, however, the government does not carry out this idea of forming local organizations for the disposing of

these materials, municipal officials would be performing a service to their citizens, their communities and the country by collecting and disposing of these wastes and encouraging the continuance of the saving of them. Properly handled, the sale of such materials should be a source of income to municipalities. Moreover, it would encourage the people to continue in the practice of thrift which they have just begun to learn and which there is danger that they will as quickly forget unless encouragement continues to be given.

TORONTO'S DRIFTING SAND FILTER.

Description of Construction and Operation—Bacteriological and Physical Test and Conclusions as to Efficiency of Plant.

A report has recently been made public of the bacteriological and physical test of a filtration plant constructed by Toronto, Canada, on Toronto Island, this plant being of the kind known as "drifting sand" filter, the only large plant of the kind on this continent. The official test extended from December 5, 1917, to January 11, 1918, exclusive of Sundays and holidays, 32 days of actual test, although the conclusions drawn in the report are based partly upon observations that cover a period of eighteen months.

The plant is a mechanical filtration plant with several novel features, the principal one being decidedly different from ordinary practice. This chief novel feature is that of the so-called drifting sand. The filter is composed of a number of units, each having a nominal capacity of 200,000 imperial gallons per twenty-four hours, with ability to operate for a ten-hour period at a rate twenty per cent greater than this. In each of these units there is a bottom layer of water-worn gravel from 20 mm. to 30 mm. diameter, nine inches deep. On this rests the filter sand, the maximum particles of which have a diameter of 1.2 mm., with 60% less than 0.7 mm. Through the center of the filter rises a pipe which delivers the raw water at a point about ten feet above the bottom, while around the outside of the tank is a narrow trough whose side rises about two feet above the bottom. This trough is connected by pipes to a sand washer, and sand from the outside and top of the body of filter sand in the tank is washed out continuously through this trough, leaving a cone-shaped body of stationary sand in the center. The sand so washed out, which is called drifting sand, after being washed in the sand washer, passes to a Venturi-shaped induction pipe interposed in the pipe by which raw water enters the filter, and is carried by the raw water to the top of the central pipe before referred to and discharged onto the top of the stationary sand. The operation is so regulated as to keep on top of the cone of stationary sand a mass of drifting sand continuously being replaced above and removed below, this drifting sand having a flat cone-shaped surface, and being approximately two and a half feet deep above the center of the stationary sand cone and six feet deep around the outside of the tank.

The raw water receives the necessary amount of coagulant before entering the filter, but is not passed through any sedimentation basins but all of the suspended matter with the coagulant is carried into the filter. It is intended that by far the larger part of the suspended matter will be removed by the top layer of drifting sand and carried with this into the sand washer, while the stationary sand below will perform the final filtration and receive but a small part of the clogging suspended matter; and that consequently the stationary sand will require washing only at long intervals. When such wash-

ing is required it is performed as in ordinary rapid sand filters, by a reverse flow of filtered water.

In the Toronto plant there are ten filter tanks, each containing thirty units placed in two concentric rings, eighteen in the outer ring and twelve in the inner, in the center within which rings is a tank about seventeen feet diameter which contains the raw-water control balance. The total horizontal area of the ten filters is 17,450 square feet, but the areas of the cones of sand are so much greater than the horizontal area that their total amounts to 35,000 square feet; the sides of the stationary sand cones having a slope of about 64 degrees with the horizontal, while those of the drifting sand cones make an angle of 32 degrees.

In the general description it was stated that the raw water entered through a central pipe, carrying the washed sand with it. Sufficient raw water is so introduced to carry up the washed sand, and any additional amount of raw water desired is introduced through a by-pass to a point above the drifting sand. The amount entering through the sand washer and that through the by-pass are controlled by a loaded valve, so that the total amount being filtered may be controlled and also the amount entering through the sand washer; which latter amount will serve to regulate the rate of movement of the drifting sand.

The contract for this plant was let in June, 1914, for a contract price of a little more than one million dollars. It was specified that the plant should remove 90% of all organisms where these were from 50 to 500 c.c. in unfiltered water, 95% where the bacteria exceeded 500 and were less than 2,000, and 98% where there were more than 2,000; also that 98% of the *B. coli* should be removed, and all of the turbidity. These results were to be obtained with the use of not to exceed one grain of alum per imperial gallon of water under average conditions.

The test last winter was made of five of the filter units. A total of 108 bacteriological samples of the filtered water and 108 examinations of the raw, unfiltered lake water were made during the thirty-two days of the actual test. As the lake was frequently disturbed by storms during the test, the conditions were possibly worse than the average for the year. During the test the amount of alum applied averaged 1.02 grains per gallon as compared to the one grain called for. When the condition of the raw water showed evidence of pollution the amount of alum was increased, but on four occasions, when it was said to be impossible to make the chemical determination of the raw water, less alum was applied than should have been. The average amount of water filtered daily was 31,333,000 imperial gallons, as compared to the 30,000,000 nominal capacity. Turbidity of the raw water varied from one part per million to 115 parts, with an average of 6.6 parts. The effluent was at all times clear and bright, the turbidity at no time exceeding one.

The pumping of the raw water through the plant was performed by electric pumps, and on several occasions there was failure in the hydro-electric supply, which seriously disturbed the operation of the filters. For this reason those making the test considered it proper to exclude the results during four days of the test period.

The report on the plant was made by Colonel George G. Nasmith, director of laboratories of Toronto, and N. J. Howard, bacteriologist in charge of the filtration plant.

The average total bacterial reduction was 93.9%. On the days when the bacterial count was between 50 and 500, the filter removed 97% as compared with the 90% called for. On only one occasion did the bacteria in the raw water exceed 500, and then the removal was 99.4%

as compared with the 95% required. The filters removed 95.48% of the *B. coli* as an average for the thirty-two days, or 98% if the four days before referred to were eliminated.

Tests and studies made of the operation of the filter after the formal test referred to have shown that, while the raw water did not vary to any great extent chemically, yet considerable physical and bacteriological variations followed the addition of aluminum sulphate, this being particularly noticeable when variations in the temperature of the water occurred. The floc formed more slowly when the temperature was below 45° Fahrenheit than when it was between 45° and 70°. It was found, however, that the water in which the best floc occurred did not give the best bacteriological purification in the filter, but on the contrary, the colder waters generally gave the best results and were easier to treat.

In order to determine the difference between alum-treated waters after thirty minutes contact and three-hour sedimentation periods, two small rapid-sand filters were used, filtering raw water which had been treated with alum varying in quantities from 0.5 to 3.5 grains per gallon. These tests established the important point that the time element was not a factor in the purification. Numerous brands of alum were tried and it was found that the purer the alum the better the results. These tests showed that water colder than 45° Fahrenheit when treated with alum required less alum, although the floc formed more slowly, and also gave better results than when the water was of higher temperature. Water which was moderately polluted and had a turbidity not greater than ten p.p.m., with a temperature over 46°, required at least two grains per gallon to get good bacterial purification, although the floc formed more quickly than in colder water. In turbid water the floc generally formed more quickly than in clear. Formation of floc was invariably retarded when the water contained large numbers of microscopic organisms. Considerable physical differences in the water treated seem to occasion no differences in the final floc formation and clarification at the end of eighteen hours.

In their conclusions, the authors of the report, said: "In a large number of cases we were unable to definitely ascertain the cause, judging by chemical, physical or bacteriological tests, as to the differences in action of the coagulant upon the resultant purification. As we have previously stated, there was a considerable effect due to changes of temperature, but this did not appear to account for all the differences noted. Obviously the nature of the colloidal content in some waters prevented flocculation, this being particularly demonstrated by a laboratory test in which gelatine (.01 p.p.m.) was added to the water, and the bacterial efficiency was seriously affected thereby. We are also of opinion that fine suspended matter and the organic microscopic content play an important part in interfering with this process.

"The decision we arrived at when the tender for the mechanical plant was first let, 'That our former conception of a filtration plant was undergoing a material change; that sterilization of the water was the vital thing, from the public health standpoint, but that a filter was essential to clean the water, keep sand and dirt out of the water supply, and thereby prevent the wear and tear of machinery valves, taps, etc., as well as prepare the water for efficient sterilization; and that for a great portion of the year only a fraction of a grain of alum in conjunction with a slight amount of chlorine would be essential for filtration, thereby resulting in a great saving in the cost of operating,' has been generally confirmed as a sound one, not only by ourselves, but by sanitarians in civilian and army work the world over."

Nothing is said in the report concerning the cost of operating a filtration plant of this type as compared with the ordinary rapid-sand filter with pre-coagulation. It having been apparently demonstrated that a drifting sand filter will give as good results as the ordinary rapid-sand filter, this matter of relative cost, taking into consideration the interest and depreciation charges, cost of chemical and other operating expenses, becomes the important one in determining which of the two types of plant is preferable. It is to be hoped that this financial comparison will be available to engineers at no distant date.

DIRECT CHARGING OF CONCRETE MIXERS.

In the construction of a ten-mile section of the Coleman Du Pont road in Sussex County, Delaware, the most notable feature of the construction of the concrete pavement was the direct loading of the materials. Special care was exercised as to the quality and cleanliness of the materials. The only ingredient obtained locally was water, obtained from wells driven along the road about a mile apart. All other ingredients were delivered by railroad. Concerning the handling, Charles M. Upham, chief engineer of the Delaware State Highway Department, said recently:

"The new feature on this particular construction was the direct loading and method of handling the materials in marked contrast to the old procedure of storing the fine and coarse aggregates on the sub-grade in front of the mixer and loading the mixer by means of wheelbarrows dumped into the skip. Many times under this old method it happened that the materials were not distributed uniformly on the subgrade, and quite often the wheelers had to push their wheelbarrows considerable distances, while at other times there would be too much material on the subgrade, making it necessary to remove enough to allow room for the wheelers to work.

"Careful records kept of this method show that at least in one instance there was a loss of 10 per cent of the fine aggregate and of 8 per cent of the coarse aggregate.

"With the material dumped on the subgrade there is always a chance that dirt will be picked up from the subgrade when the material is shoveled into the wheelbarrows. When the direct loading is used, this hazard of getting dirt from the subgrade mixed into the aggregate, as well as any loss of aggregate, is overcome entirely. Not only was the material kept clean and a great saving made in eliminating the loss of aggregate materials, but one complete handling of the materials was eliminated and approximately 12 men were released from the mixer gang.

"Briefly, the direct loading method is described by stating that the materials to be used in the construction of the road are loaded directly from freight cars into box containers, in correct proportions, transported to the concrete mixer and dumped directly into the skip. For emergencies, stock piles of sand and stone were maintained at the freight station, but these were seldom used.

"In this particular instance the containers, which held sufficient aggregate for a three-bag batch, were transported to the construction by means of an industrial railway, but there seems to be no reason why this same method could not be carried on by use of motor trucks. Two containers were placed on each car and a train load of 15 cars hauled to the mixer. Containers were lifted from the cars by means of a derrick attached to the concrete mixer. Three men were required to dump the container into the skip and one man was necessary on the derrick to lift the containers from the truck. After

the container was lifted approximately 4 inches it would clear the body of the car.

"The transporting of materials was carried on by three trains handled by an industrial engineer. While one train was being loaded at the freight station, the second train was being hauled to the concrete mixer, and the third train was being unloaded at the concrete mixer. This method worked out very satisfactorily up to a 4-mile maximum haul, and with proper equipment there should be no limit for the satisfactory working of this method. The cars holding the containers are moved at the concrete mixer by hand or by mule.

"It was necessary to have a siding for storing the empty cars near the mixer in order to allow the trains to pass. This siding was moved each day with very little trouble and at small expense.

"The specifications required that all concrete should be mixed one and one-half minutes and there was no delay on account of the direct-loading method. Under favorable conditions, approximately 600 feet of 14-foot pavement was completed in one day, all the concrete having been mixed one and one-half minutes.

"The completion of the concrete road was practically standard practice. After the subgrade was brought to the proper elevation and uniformly compacted it was thoroughly wet before the concrete was placed. The concrete was shaped with a steel template, approximately 8 inches wide, which left the surface comparatively smooth. After a short time the surface was finished with a belt, and the small places that were not smooth after the belt was used, were troweled. It is expected to try the roller method on the next section. Immediately after finishing, sun covers were placed over the concrete to protect it from the sun and wind. These covers, constructed of wood frames covered with canvas or heavy cloth, were supported about 6 inches above the pavement. Experiments show that they are a great help in curing the concrete and preventing the small cracks due to quick drying of the surface.

"As soon as the concrete was sufficiently hard, an earth covering, practically 2 inches deep, was thrown on the roadway and thoroughly wet, in which condition it was kept for approximately 14 days. The earth covering was not cleared off for 30 days. This time of curing was possible, because the greater part of the road was located through new territory and very little traffic was encountered. After 30 days the roadway was cleared and the road thrown open to traffic.

"Not only has the direct loading produced more uniform and better concrete, but it has increased the output of a plant and at the same time reduced the cost of construction."

TO PROMOTE MOTOR TRUCK EXPRESS.

The Highways Transport Committee of the New York State Council of Defense will carry on a campaign in every county in the state to promote motor express lines. In addition to establishing rural motor lines the chief endeavor will be to start return load bureaus and to secure the removal of snow from roads so as to permit truck transportation the year round.

Highway Commissioner Duffey told the committee at a recent meeting that state highways had stood the severe test of the movement of Government motor trucks with excellent results, save where the trucks were used last spring on the older sections before the frost was out of the ground.

The WEEK'S NEWS

War Restrictions on Highway Construction—Construction Work of U. S. Road Bureau—Pennsylvania Votes \$50,000,000 for Roads—New Work for U. S. Public Health Service—Canton's Water Supply Investigated—Coal Saving Through Power Plant Efficiency—Chicago Disapproves Car Franchise—Investigating New York's Fatal Subway Wreck—Street Car Fare Difficulties in Kansas City—U. S. Lifts Ban on Public Improvements—Election Results.

ROADS AND PAVEMENTS

How War Restricted Highway Construction.

Washington, D. C.—Indicating how the war-time policy of restricting highway construction to projects of military or great economic importance has been enforced, the Bureau of Public Roads announces that from the day in January, 1918, when the Secretary of Agriculture called upon the states to conserve money, labor, transportation and materials as far as possible, to September 30 the payments on federal-aid post-road projects aggregated \$852,943.84, or less than one-thirtieth of the amount which theoretically could have been paid in that period. In the administration of the federal-aid road act, 691 projects, involving construction of 7,377.83 miles, at a total estimated cost of \$52,673,898.74, of which federal aid comprised \$19,843,315.02, were approved by the Secretary of Agriculture in the period from July 11, 1916, when the act became effective, to October 1, 1918. The total amount of federal aid available to October 1, after deducting 3 per cent for administrative purpose, was \$29,100,000.

Municipalities Buy Intercity Bridge.

Kansas City, Mo.—After lengthy negotiations for the purchase of the Intercity Viaduct over the Missouri River valley by Kansas City, Mo., and Kansas City, Kan., a purchase contract has been signed. The last offer of the bondholders in the viaduct company was a price of \$1,750,000, and this offer was accepted. Kansas City, Mo., will pay 56 per cent of the amount and its Kansas neighbor 44 per cent. Municipal bonds at 4½ per cent, redeemable in five to 30 years, will pay for the viaduct. Ratification of the bond issues by general vote is necessary to make the purchase finally effective, but approval is almost certain. In the meantime, the cities will take over the structure and throw it open to free use.

Bridge on Lincoln Highway Collapses.

Kantner, Pa.—The Lincoln Highway bridge over the Stonycreek River at Kantner, Somerset County, recently collapsed under the weight of a state highway department road roller. All traffic on the Lincoln Highway at that point was temporarily suspended pending repairs. Vehicles were required to make wide detours, and it was feared weak bridges on the detours would not withstand the weight of the heavy army transports which are using the Lincoln Highway. It is asserted that frequent complaints had been made to the Somerset county commissioners concerning the condition of the bridge which collapsed.

City Loses in Sale of Granite Blocks.

Boston, Mass.—Considerable financial loss has been suffered by the city of Boston by the sale of 152,000 granite paving block to John E. Quinn at \$20 a thousand, according to a report by the finance commission sent to mayor Peters and the city council. The report is in reply to a request of the mayor as to the advisability of the sale. As the blocks are in excellent condition, and, if relaid in a proper manner, will produce an equally good pavement for heavy traffic streets as will new blocks, the commission contends that the material should not have been sold. It also believes that the price was too low, and that the attempt of the officials of the public works department to "barter these blocks in part payment of the contractor's

bills against the city appears to be an attempted evasion of the provisions of the city's ordinances." The finance commission recommends: (1) That the method of settlement of the sale of 152,000 granite paving blocks be referred to the corporation counsel for advice. (2) That no paving blocks suitable for relaying be sold. (3) That the force of stonecutters and laborers of the public works department be employed, as far as necessary, during the winter months in cleaning, culling and recutting the supply of 1,000,000 or more granite blocks which have already been removed from the city's streets. (4) That if, for any reason now unforeseen, any blocks must be sold, such action be taken only after public advertisement.

Federal Roads Bureau Builds Camp Highways.

Washington, D. C.—Nine miles of concrete road between Alexandria, Va., and Camp Humphreys, Va., soon will be ready for use, marking the completion of planning and supervisory work done by engineers of the Bureau of Public Roads of the U. S. Department of Agriculture for the military authorities. The road from Alexandria to Camp Humphreys is the longest military highway outside of cantonments that has been planned and supervised by engineers of the bureau, although the total construction planned and supervised by these engineers aggregates several hundred miles and covers practically all the recognized types of construction, from sand clay to first-class bituminous surfaces and concrete roads. Seventeen highway engineers and one superintendent of construction were detailed to military work by the bureau in July, 1917, the period of their assignments varying from three to fifteen months.

Big Majority for \$50,000,000 Road Bonds.

Harrisburg, Pa.—The \$50,000,000 bond issue for good roads, defeated in 1913 by 41,393 votes, was passed at the recent general election by upward of 180,000 votes. The Associated Highways organizations, which was the main factor in the success, was formed in May for creating sentiment for the bond amendment to the constitution, and had 29,000 persons working for it prior to the election. The Associated Highways organization was formed by the following organizations: Lincoln, William Penn, Perry, Sullivan, Lackawanna Trail, Susquehanna, Lakes to Sea and county organizations in Cambria, McKean, Bradford, Washington and other counties. The officers of the association were John S. Fisher, Indiana, president; Dr. P. T. Johnson, Erie, vice-president, and William Jennings and M. H. James, Harrisburg, treasurer and secretary. The bond issue proposition now goes before the legislature. Before his election Senator William C. Sproul, now elected governor, promised that no bonds would be issued until after the war. There is some talk of testing the constitutionality of the plan before the courts. The issue was opposed by the local Grange organizations. The farmers held that the defeat of the proposed loan will be the first step toward the adoption of a sound and rational road policy by the state. Part of their statement follows:

The Grange is unalterably opposed to the idea of striking out the provision embodied in our constitution that the state shall be kept free from debt, except in case of invasion or other military necessity. Our proud boast for nearly two generations has been that we have no state debt. It is needless to say that the only reason why it has been possible for us to make this boast is that our fundamental law does not allow us to go into debt. Had it been otherwise, our state

capitol would long since have been turned into a hock shop in which the birthright of future generations would have been frittered away, and there would be little more to show for it in the way of public improvements than we now have.

It should not be overlooked that the \$50,000,000 it is proposed we borrow would scarcely build one-tenth of the roads now under state control, and that there would be absolutely no money available from the sum to build and maintain the tens of thousands of miles of other necessary roads in the commonwealth.

If Pennsylvania has the ability to raise such vast sums of money with such ease, as the advocates of the bond issue jauntily assert, then it would not be out of order to ask why it should be deemed necessary to issue bonds at all. Why not devise some plan of raising the money as it is needed, paying for the roads as we go, thus spending on actual road construction the money that would otherwise have to be paid out to meet the interest on bonds?

By pursuing such a course, we would avoid the temptations and extravagance that would accompany the adoption of the policy of going into debt, and we would be preserving the sound fiscal policy that was laid down for us by the framers of our constitution.

As the Grange views it, there is not a single valid reason why the state should reverse the policy of keeping out of debt that it has followed with such good results for nearly fifty years, and there is every reason why we should vote down the proposal to depart from it. The defeat of the proposed bond issue will be the first step toward the adoption of a sound and rational road policy.

The completion of the proposed Sproul state highway system, which, it is claimed, will give Pennsylvania a road network comprising the best highway system in America, will not only give every county in the state its proportionate share of 365-day roads, but it will mean the completion of eight trans-Pennsylvania thoroughfares over which crop and other freight movements will be greatly expedited. These eight cross-state roads are made up of sections of the state highway system which are part of the intercounty systems. The completion of the county systems will see the completion of the cross-state roads. Cross-state systems include:

Erie to Confluence.—From Erie through Meadville, Mercer, Butler, Pittsburgh, Monongahela, Connellsville to Confluence (or from Mercer to New Castle, Beaver Falls and to Pittsburgh).

Erie to Honesdale.—From Erie through Corry, Warren, Bradford, Smithport, Coudersport, Wellsboro, Mansfield, Towanda and Montrose to Honesdale.

Jamestown (N. Y.) to Gettysburg.—Jamestown through Warren, Kane, Ridgway, DuBois, Clearfield, Tyrone (or Bellefonte), Lewistown, Harrisburg, Gettysburg. This road can be reached from Olean, N. Y., through Bradford and Kane.

Elmira (N. Y.) to Gettysburg.—Elmira through Mansfield, Williamsport, Muncy, Lewisburg, Sunbury, Harrisburg, Gettysburg. From this road an easy cross-over will lead to Bellefonte from Williamsport through Lock Haven.

Binghamton (N. Y.) to Phillipsburg (N. J.).—Binghamton through New Milford, Scranton, Tobyhanna, Stroudsburg and Easton to Phillipsburg.

Scranton to Gettysburg.—From Scranton through Pittston, Wilkes-Barre, Bloomsburg, Sunbury, Harrisburg to Gettysburg.

William Penn Highway.—From Pittsburgh through Blairsville, Johnstown, Ebensburg, Altoona, Hollidaysburg, Huntingdon, Lewistown, Mifflintown, Harrisburg, Lebanon, Reading, Norristown to Philadelphia. An extension of this road leads from Reading through Allentown, Bethlehem and Easton to Phillipsburg, N. J., and New York.

Lincoln Highway.—From Beaver Falls through Pittsburgh, Greensburg, Bedford, McConnellsburg, Chambersburg, Gettysburg, York, Lancaster, Coatesville to Philadelphia.

It is explained these are not construction projects, but will result from the completion of county roads by the state. In addition to the trans-state roads named, the National Pike crosses the southwestern corner of Pennsylvania through Washington, Brownsville and Uniontown. The construction of the system of 365-days-per-year roads which will result in this cross-state system will mean, it is asserted, that every farm in the state is either on a hard-surfaced road or within a few miles from such a road.

SEWERAGE AND SANITATION

Industrial Sanitation Under Federal Health Service.

Washington, D. C.—The United States Public Health Service has created the office of "Industrial Sanitation and Medicine" to carry out the terms of a presidential order giving that bureau jurisdiction over all inspections and investigations pertaining to the health of war workers and to plant sanitation in establishments engaged in the production of war materials. By order of the Chief of Ordnance, responsibility for investigating into mechanical safety in plants engaged in ordnance production has also been given to the public health service and delegated to

the office of industrial hygiene and medicine. The Health and Sanitation Division of the Emergency Fleet Corporation is taken over by the United States Public Health Service under the executive order. Lieut. Col. Philip Schuyler Doane, head of the Health and Sanitation Section, will go to France next month to take charge of an evacuation hospital. Lieut. Col. Doane established and developed the work of the Health and Sanitation Section. Some of its activities are sanitation, water supply, sanitary disposal, dispensaries, hospitals, first-aid equipment, physical examination, mosquito and fly extermination and handling of epidemic and communicable diseases. After perfecting a thorough-going organization, Col. Doane applied the stringent methods of the United States Army to the shipyards to secure the health and efficiency of shipyard workers to the number of 250,000 throughout the nation. By its vigilance the Health and Sanitation Section has already prevented small-pox, typhoid fever and other epidemics which, if neglected, would have seriously handicapped the yards in the task of creating our new merchant marine. In its campaign of disease prevention the section has paid particular attention to the water supply of the shipyards. Springs and other water sources which revealed evidences of pollution have been closed and pure water supplies provided. The section has been conducting a vigorous crusade against insanitary restaurants and lunch rooms in the vicinity of shipyards. Thirteen of these on the Pacific Coast already have been condemned and closed, and condemnation proceedings have been instituted against others. The section has found that venereal disease has the same evil effect upon the efficiency of shipyard workers as it has upon the efficiency of soldiers on the battlefield, and army methods have been employed to combat the scourge. A campaign of education is being conducted among the workers in every yard in the country, and clinics have been established in every shipbuilding centre. In the state of Pennsylvania alone there are one hundred of these clinics, and arrangements have been made with various hospitals for isolation wards.

Proposed Federal Tuberculosis Hospital.

Washington, D. C.—A program has been submitted by United States Public Health Service for a twenty-six-million-dollar chain of hospitals throughout the country to care for 14,000 tuberculosis patients discharged from the army and navy service because of disability in line of duty. A bill before the House committee on public buildings and grounds introduced by chairman Clark would authorize the Secretary of the Treasury to provide hospital and sanatorium facilities for discharged sick and disabled soldiers and sailors. This bill asks for an appropriation amounting to ten and one-half million dollars. It carries the support of Secretary McAdoo, as the public health service comes under the Treasury Department. A letter from William C. DeLanoy, director of the bureau of war risk insurance, also supports the proposition. Indorsement also is given by Lieut. Col. Earl H. Bruns, Medical Corps, U. S. A.; Lieut. Col. W. E. Eaton, Medical Corps, U. S. N.; Surgeon General Rupert Blue, of the public health service, and W. G. Stimpson, assistant surgeon general of the public health service. The appropriation of ten and a half million dollars is asked for immediately in order to make provision for the care of 5,000 tubercular patients. Dr. Stimpson, in addressing the committee at a hearing, explained that by 1920 provision must be made for 13,000 patients, so that the project will ultimately require an appropriation of \$26,000,000. The tentative plans call for enlargement of hospital facilities in order to treat tubercular patients at the following named places on government reservations: Boston, Mass.; Chicago, Ill.; Cleveland, Ohio; Detroit, Mich.; Evansville, Ind.; Louisville, Ky.; Norfolk, Va.; New Orleans, La.; San Francisco, Cal.; Seattle, Wash.; St. Louis, Mo.; Wilmington, N. C.; Fort Slocum, Mo.; Wilmington, N. C.; Hill, Mass., and another establishment in North Carolina. The latter two are new projects. During the hearing it was put on record that disabilities in the army are at least 25 per cent result of tuberculosis infection. The majority are arrested cases

that have broken down under the military activity and which should have been detected when the man was examined by the local draft boards. N. V. Perry, architect for the public health service, explained the types of buildings.

WATER SUPPLY

Hydrant Rental But No Hydrants.

Harrisburg, Pa.—Springfield township, Delaware county, has filed an unusual complaint with the public service commission, alleging it had been charged \$4,952.60 for fire hydrant service by the Springfield Consolidated Water company, of near Philadelphia, "without any service rendered, actual or potential." There are seventeen complaints against the fire hydrant charges of the company, which were made after an order had been issued by the commission establishing a basis of rates for service, but none of them is like that of the township. It is declared that it was not a party to any of the complaints wherein the order was made by the state authorities, but that it considers the rates made as unfair, excessive and unreasonable. The township, says the complaint, has no fire hydrants, has never asked for any fire service and does not want any because it is a rural community, composed chiefly of farms. Owing to the system of making charges according to mileage of mains, and the fact that the company's plant and thirteen miles of mains are in the township, it has been charged for service.

Riparian Rights to Underground Water.

Vacaville, Cal.—The Vacaville Water & Light Company has filed a suit against the Pacific Portland Cement Company, asking for damages in amount of \$25,000 for alleged intrusion on plaintiffs water rights.

The complaint alleges that plaintiff has been in the business of selling water to the town of Vacaville for twenty-eight years, and since 1907 has been supplying about 16,000 gallons an hour for that purpose.

It further states that the defendant also has a pumping plant adjoining the land owned by plaintiff, and from which it pumps approximately 480,000 gallons of water a day to its plant at Cement.

In order to procure this large volume of water, plaintiff alleges, the defendant bored wells within fifty feet and twenty-four feet, respectively, of the subterranean stream previously tapped by the plaintiff, thereby lowering plaintiff's wells from fifteen to twenty-three feet per day while defendant's pump was in operation.

By virtue of the tapping of the stream supplying plaintiff's wells, plaintiff alleges that it will be unable to supply the town of Vacaville and that its water rights will be entirely useless, unless the court restrains the defendant from using the wells bored near the land of plaintiff.

Report on Improvement of Water Supply.

Canton, O.—Recommendations for the permanent improvement and enlargement of the water works system at an estimated cost of \$1,454,900 have been submitted to the city council by the Canton Water commission. The report of the commission was accepted by council and was referred to the committee on water. This committee, it is expected, will go over the details, some of which will be taken up with the finance committee, and will then be ready to make a report. The improvements recommended and the estimated cost of each follows: Metering of the entire city, \$252,000; distribution reservoir of 15,000,000 gallon capacity, \$280,000; reinforcement of distribution system, \$500,000; northeast pumping station, wells and basin, \$237,900; generating plant for operation of northeast station, \$145,000; Elgin avenue NW. station, improvements and basin, \$40,000. One of the interesting features in connection with the commission's report, is the suggestion that steps be taken which later may result in the city furnishing power for its lighting system. It is recommended that, in connection with the main pumping station on Elgin

avenue, a power plant sufficient to generate and provide an adequate supply of power for several pumping stations and that this plant be so built that sufficient units may be added later to provide for the light of streets and alleys as well as public buildings.

STREET LIGHTING AND POWER

"Lightless Night" Orders Modified.

Washington, D. C.—Through a modification of the "lightless night" order, store windows may hereafter be lighted on "lightless night" during such hours as the stores remain open for business. This modification of the orders promulgated on Nov. 9, 1917; Dec. 14, 1917, and July 18, 1918, is effective at once in New England and the states of New York, Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia. When closed for business, window lights must be put out, as heretofore, on Monday, Tuesday, Wednesday and Thursday nights. No change has been made in the "lightless night" order respecting signs, ornamentation of buildings, and other wasteful use of light in streets, parks or public places. Fuel Administrator Garfield says that it is essential to lessen and prevent waste of fuel.

Blames Company for Delay in Municipalizing.

Racine, Wis.—The state railroad commission has dismissed the application of the Racine Waterpower Company, which asked that the valuation made by the commission be nullified because of the delay by the city in taking over the plant. The commission in its decision finds that the delay in taking over the plant has been occasioned by the water company's continual litigation and not by the city. It finds that an unreasonable time has not elapsed for the taking over of the plant. The company contends that between the time the valuation was made by the commission and the present time the valuation of the property has increased to \$700,000. Even though this be true, the commission holds that the valuation made by the commission originally is the controlling value.

Power Plant Efficiency Saves 7,000,000 Tons of Coal.

Washington, D. C.—Through the cooperation of the industrial power plants which have up to the present time put into force the standard recommendations of the United States Fuel Administration to promote efficiency in the use of fuel in power plants a saving of 7,000,000 tons annually has been effected. According to the records in the first six months from the announcement of the national program 3,500,000 tons have been conserved, at the same time maintaining maximum production in the factories. The largest savings have been reported in the states of Massachusetts, Pennsylvania, Connecticut, Illinois, New York, Missouri, Michigan, Minnesota and Wisconsin.

Proposed Federal Power Plant Construction.

Washington, D. C.—Detailed plans for the expenditure of the \$175,000,000 appropriation asked for by the Administration in its Emergency Power Bill for the acquisition and extension of electric power plants are shown in the following tables. Estimates of the additional power that will be required to furnish adequate supply for existing war industries, together with the location and cost of the necessary generating and transmission plants, are shown:

Location	Horse-power	Cost
Philadelphia, Chester and adjacent territory	120,000	\$14,500,000
State of New Jersey	94,000	5,500,000
Western Pennsylvania and Eastern Ohio (Pittsburgh, Youngstown), Akron, Wheeling, Connellsville and adjacent territories	440,000	35,000,000
Baltimore, Lancaster and adjacent territories	53,000	3,942,000
Wilmington, Del., and vicinity	13,300	610,000
Pennsylvania anthracite region	53,000	8,000,000
New England states	75,000	14,625,000
Southern states	135,000	15,000,000
Mississippi smaller power system, east and middle west states	250,000	31,250,000
Pacific Slope, west of Rocky Mountains	.....	10,000,000
Total	.....	\$138,427,000

Estimating additional power requirements at 500,000 h.p. at least, another \$60,000,000 must be added, bringing the total construction costs to \$198,427,000. Preliminary power surveys have disclosed electric power shortage in the following districts:

Alexandria, Va.	Newark.
Altoona, Pa.	New Brunswick.
Baltimore, Md.	Orange.
Bucyrus, Ohio.	Passaic.
Charleston, S. C.	Paterson.
Cleveland, Ohio.	Perth Amboy.
Columbus, Ohio.	Rahway.
Eastern Pennsylvania.	Somerville.
Erie, Pa.	Trenton.
Hammond, Ind.	Niles, Mich.
Harrisburg, Pa.	Philadelphia, Pa.
Huntington, W. Va.	Pittsburgh District, Pennsyl-
Johnstown, Pa.	vania:
Kansas City, Mo.	Akron, Ohio.
Lehigh District, Pennsylvania:	Alliance, Ohio.
Allentown.	Canton, Ohio.
Bethlehem.	Massillon, Ohio.
Hazleton.	Warren, Pa.
Milton.	Western, Pa.
Sunbury.	Wheeling, W. Va.
Luna, Ohio.	Youngstown, Ohio.
Little Rock, Ark.	Portland, Ore.
Lorain, Ohio.	Reading, Pa.
Lowell, Mass.	Richmond and Norfolk, Va.
Michigan City, Ind.	Richmond, Ind.
Milwaukee, Wis.	Scranton, Pa.
Minneapolis, Minn.	Terre Haute, Ind.
St. Paul, Minn.	Texas (Northeastern):
Newport News, Va.	Denison.
New Jersey:	Fort Worth.
Bayonne.	Gainesville.
Bound Brook.	Paris.
Camden.	Taylor.
Elizabeth.	Waco.
Hoboken.	Three Rivers, Mich.
Jersey City.	Watertown, N. Y.
Montclair.	

The bill, which recently passed the House, instead of providing for an independent corporation with authority to loan funds to private enterprises to increase power capacity, grants authority to the War Finance Corporation to lend money for that purpose up to a total of \$50,000,000. The bill is now before the Senate.

Commission Raises Rates Without Revising Schedules.

Springfield, Ill.—In permitting rate increases under limiting conditions by the Aurora, Elgin & Chicago Railroad and subsidiaries, the state public utilities commission's decision says in part: "An examination of the rate schedules filed by the company discloses that in general the increases requested for lighting and power service will amount to 25 per cent for all lighting service, including municipal street lighting, and 33 1/3 per cent for all power service. In the schedules proposed by the company, several rates which have heretofore been in effect have been eliminated, and in some cases new rates are substituted of different character. It is probable that these changes would result in disproportionate increases of rates as applied to individual consumers. The commission has previously expressed itself to the effect that utilities applying for relief from present emergency conditions should not attempt materially to adjust and revise existing rate schedules unless complete justification therefor is submitted. It would, therefore, appear that the Aurora, Elgin & Chicago Railroad Company, pending further investigation, should keep in effect rates of the same character as the rates at present in effect and applicable to the same consumers and for the same character of service. The schedules as filed herein are unsatisfactory in form, and do not comply with the general orders of the commission. The commission, having considered the rates herein proposed, all the testimony adduced and the representations and arguments made, and being fully advised in the premises, finds that the Aurora, Elgin & Chicago Railroad Company, the Ardmore Electric & Gas Company, the Elgin Merchants' Light Company and the DuPage County Electric Light & Power Company should be temporarily authorized to increase their rates for electric lighting service (but not for municipal street lighting service) by an amount of 25 per cent of the net rates at present on file with the commission, and should be temporarily authorized to increase their rates for all power service by the amount of 33 1/3 per cent of the net rates as at present on file with the commission, subject to the conditions regarding refunds of advanced rates or such portions thereof as may be found to be unjust."

TRAFFIC AND TRANSPORTATION

Chicago Rejects Traction Franchise.

Chicago, Ill.—The "service-at-cost" franchise submitted to the voters at the recent general election, has been defeated, after a bitter campaign. With no alternative plan suggested, it is probable that the companies will continue operation under their present franchises—the surface lines for nine years more and the elevated for about twenty years. The plans contemplated the expenditure of about \$300,000,000 for transportation improvement, one-third of this to be used in the first six years. Many civic and women's organizations, as well as almost all the newspapers, supported the plan, while municipal ownership advocates, the mayor's supporters and labor men opposed it. The transportation companies are asking the state public service commission for a seven-cent fare.

Threaten to Sell Trolleys as Junk.

Ocean City, N. J.—The bondholders' committee of the Ocean City Street Electric Railway Company has notified the city commissioners that the company plans to "junk" the road because of its inability to meet running expenses, but will sell road to the city for \$84,000. Mayor Champion will notify the several civic organizations that he desires the property owners and taxpayers to hold a public meeting to discuss the proposition.

The road has been in operation for more than a quarter of a century, but it is claimed has never been a paying investment. The road does not traverse the business section and many people who do not own automobiles prefer to walk several blocks to reach their destinations rather than walk a few blocks to board the cars to ride six or seven.

Responsibility Undetermined for Fatal Wreck.

New York, N. Y.—So far, with hearings and investigations continuing, responsibility for the recent wreck on the Brooklyn Rapid Transit lines has not been determined, and the result has thus far been only political squabbles. More than ninety persons were killed and about a hundred injured, the crash occurring during evening rush hours. It has been proved at hearings held by Mayor Hylan, acting as magistrate, that the motorman, who escaped uninjured, was untrained and had been running the train because of a shortage of motormen owing to a strike. It was proved that the motorman disregarded signals and took a sharp curve into a tunnel at excessive speed. The five-car train jumped the tracks, crashed into the tunnel wall, and the two front cars, built of wood, were shattered into splinters. The public service commission sent a letter to the directors of the New York Consolidated Railroad Company, serving notice that it will object to any of the damages paid as the result of the accident being included in the financial accounting to which the city is a party. The letter also objects to the inclusion in the joint accounting of any legal or other expenses, and especially such expenses incurred in criminal proceedings against officers or employees of the company. If they were so included they would thereby increase the city's deficit. The letter also informed the company that the commission had directed its counsel to consider whether the methods of maintenance and operation, and particularly, the facts of this accident, do not constitute a forfeiture or default of the entire contract. Commissioner Whitney did not say in case the contract was forfeited what steps would be taken toward operation of the rapid transit lines of the B. R. T. system. Under the dual subway contracts the city is made virtually a partner with the two rapid transit corporations of New York, the Interborough and the B. R. T. The arrangement is that the city shares in the profits after a certain revenue is reached and that operating expenses are in part charged against it on the new rapid transit lines. The improvement of the Brighton line is a part of the city's contract with the B. R. T. The accident on the line, it has been pointed out, will bring an

enormous expense through damage suits. It has been asserted by many people that the B. R. T. would charge these losses as a part of "operating expenses," and that therefore the city would be called on to pay a share. The action of the public service commission is a formal notice that, "as the city's representative, it will oppose any such assessment. District attorney Lewis has issued subpoenas for the officials of the Consolidated Company, which is owned by the B. R. T. An interesting fact, which will have an important bearing in the fixing of criminal responsibility and the punishment of the guilty, is that the Brooklyn Rapid Transit Company itself is not sufficiently tangible to enable the law to reach for it or its directors. It is simply a holding company. The district attorney has established definitely that it is not even amenable to the rules and regulations of the public service commission. Through this network of railroading and stock holding district attorney Lewis is trying to find his way to those who should be punished for the frightful disaster.

Municipal Buses Operate at a Loss.

San Francisco, Cal.—The bus service of the Municipal Railways entails a loss to the city of \$85 a day, according to a statement made at a meeting of the Public Utilities Committee of the Supervisors by a representative of the Municipal Railways. Members of the Sunset Association appeared to complain that one bus had been taken off the run across Golden Gate Park, between Ninth avenue in Sunset and Tenth avenue in Richmond. The headway, they said, was twelve minutes up to 9 A. M. From that hour until 5 P. M. the headway was twenty-four minutes. The number of passengers did not warrant more busses, the representative of the Municipal Railroads said. He also stated it would cost \$25 a day for the rent of a bus, as the city will have none to spare of its own for sixty days, when some will arrive from the East. They cost \$6,000 each.

The Public Utilities Committee decided that in view of the demand for increased service from Sunset to Richmond another bus must be put on.

"It will cost more money and the service is already losing \$85 a day," said the municipal railroad representative.

Railway Company Asks Federal Court Aid.

Kansas City, Mo.—Because of the recent wage award of the War Labor Board, the Kansas City Railways have asked the federal courts to assure it that the necessary fare increases are put into effect. The War Labor Board's award contained the statement that the company should be permitted to charge such higher fares as would enable it to pay the increased wages, the award by stipulation having been made dependent upon the financial ability of the company to pay. Inasmuch as the public service commissions of Kansas and Missouri, as well as the city officials, were certain to oppose any direct increase by the company as a result of the recommendation of the War Labor Board, the company has resorted to the federal courts. The petition was filed in the United States District Courts in Missouri and Kansas simultaneously. It asks that the courts (1) take complete jurisdiction of the property; (2) continue the award of the War Labor Board and enforce this; (3) determine that the award is a mandate of the national government, pursuant to its war power, and that as such it is superior to any and all local or state regulations and limitations which are noted as being in conflict with the Constitution of the United States; (4) determine the rate of fare necessary to pay the wages specified and other charges necessary to the rendition of proper and uninterrupted service; (5) grant an injunction against interference with the collection of such charges; (6) retain jurisdiction and make necessary orders from time to time, and (7) grant other relief as is deemed just. The company in this petition makes definite its present revenue needs to meet the wage finding of the board. It suggests an 8-cent fare for adults, a 4-cent fare for children, and a 1-cent charge for transfers. The petition states that the War Labor Board has authority to do all

things needful to bring about the enforcement of its orders. The public utilities commission of Kansas recently held a preliminary hearing on fares. The Supreme Court of Kansas had a short time previously refused to issue an injunction against the commission restraining it from assuming jurisdiction over fares. At present, the company collects 5 cents from passengers boarding cars in Kansas, and another cent when such passengers cross the state line into Kansas City, Mo. The Missouri public service commission ordered the Kansas City Railways to charge 6-cent fares. Judge Slate, of the Cole County Court, decided that the commission had no authority to make such an order in view of the franchise provision as to 5-cent fares in Kansas City, Mo. The Supreme Court of Missouri, to which appeal was taken from Judge Slate's decision, ordered that the extra cent be impounded pending final disposal of the case. Passengers paying 6 cents receive coupons.

600,000 Tons of Coal Saved Annually by Skip-Stop System.

Washington, D. C.—Operation of the skip-stop system on the street railways in twenty-four states in the last six months has saved at the rate of more than 600,000 tons annually, according to the estimate of the fuel administration. Massachusetts reported the greatest saving with 191,000 tons, followed by Pennsylvania, 169,200; Missouri, 52,422; New York, 50,000; New Jersey, 30,000; Illinois, 25,000. While complete reports from the street railroads of the entire country are lacking, the skip-stop method of operation has, it is estimated, saved about 10 per cent in power and consequently in fuel necessary to produce that power.

Higher Fares or Receivership for New York Railways.

New York, N. Y.—Theodore P. Shonts, president of the New York Railways Company, in his annual report to the stockholders, declares that a receivership is inevitable unless the transportation lines are given permission to raise the fare from five cents.

Mr. Shonts says that materials have advanced in price until they exceed by from 100 to 300 per cent the pre-war prices, while increased pay and bonuses to employees represent an annual outlay of \$800,000, which sum, with further increases, he says, means an annual increase in the payroll of \$2,400,000. Travel, likewise, he says, has fallen off considerably, due to the shifting of population to war industrial centers. The company, he declares, had a deficit on June 30, 1918, of \$1,355,880.

"Unless an increased fare is speedily forthcoming," he says, "a receivership cannot be avoided, with its attendant losses and probable disruption of service, as under a receivership a large portion of the service now rendered by the company would be discontinued."

Canadian City Allows Five-Cent Fare.

Winnipeg, Man.—The city council has permitted the Winnipeg Electric Railway to increase fares on all city lines. The relief given is only temporary, and is preliminary to a full investigation by the public utilities commission, the results of which will determine whether the temporary increase will be confirmed, reduced or further enhanced. The new scale of fares, which became effective on Nov. 1, is as follows: Cash fare, 5 cents; tickets (good at all times), five for 25 cents; workmen's tickets (good from 6 to 8 a. m., 5 to 6:30 p. m. week days and all day Sundays), six for 25 cents; tickets for children under sixteen years, seven for 25 cents. The rates charged prior to Nov. 1 were: Six tickets for 25 cents; eight workmen's tickets for 25 cents; ten children's tickets for 25 cents. The company's application for relief was hastened by the award of a board of conciliation, which investigated demands for increased wages from motormen and conductors, and allowed increases representing an addition to the company's payroll of \$362,000 annually. A. W. McLimont, general manager of the company, presented the petition for relief to the city council. The petition asked for a 6-cent fare, seven children's tickets for a quarter, all other fares to be abolished.

GOVERNMENT AND FINANCE

Voters Defeat Bonds for Depleted Treasury.

Cleveland, O.—With the defeat of the \$2,500,000 bond issue at the recent election, by the passage of which it was hoped the city would be able to pay its employees, the city had to turn to the banks and borrow money on the promise to pay from next year's taxes. The banks have advanced \$200,000 for the present, and further loans will have to be made to carry the city along until funds from taxes or from a resubmission of the bond issue provide the depleted treasury with money. The mayor, his cabinet and members of the city council are excluded from payment of salaries from money obtained in the present loan.

Manager Plan Wins.

Auburn, N. Y.—By a vote of 3,317 to 2,643, the voters have decided in favor of the Plan C form of government under the state optional charter law. The new form provides for a city commission, which is to appoint a city manager. The first commission administration will not go into office until January, 1920, after being elected next fall.

Votes to Become City.

Wakefield, Mass.—A city charter was adopted by the voters of this town at the recent election by a vote of 845 to 807. This will give Massachusetts 39 cities.

Voters Disapprove Commission's Salary Increases.

Trenton, N. J.—At the recent election, the voters denied the members of the city commission an increase of salary. At present the mayor gets \$3,500 and the other four members \$3,000. The referendum was on the proposition to give \$5,200 to the mayor and \$4,500 to each of the other commissioners. The vote was, for the referendum 3,884 and against it 7,939.

Ban Lifted on All Municipal Improvements.

Washington, D. C.—The first important step of an official nature taken by the War Industries Board and the Fuel Administration as a result of the signing of the armistice by Germany lifts the governmental ban on all public and municipal improvements, excepting certain buildings. Orders issued will have the effect of removing many of the restrictions on the more important public improvements, as well as on many public and private building activities, and will cut by 50 per cent the curtailment which had been placed on forty-two classes of industries. Building activities on a large scale, such as the erection of schoolhouses, apartments, office buildings, and other large structures which involve millions of dollars, however, will not be permitted for the present. It is probable that further rulings on this question soon will be made. It is considered significant in this connection that the limitations on the production of all building materials is lifted and their delivery for other than war purposes permitted. The text of the order, as it applies to public improvements, follows:

All of the rules, regulations, restrictions and directions embodied in orders and circulars issued by the Priorities Division of the War Industries Board are continued in effect subject to the following modifications:

Section 1.—Section 5 of revised circular 21, issued by this division as of date Oct. 15, 1918, dealing with non-war construction is hereby amended so as hereafter to read as follows:

"Section 5.—Construction projects not requiring permits or licenses from non-war construction section. Construction projects falling within the following classifications are hereby approved, and no permits or licenses will be required therefor from the non-war construction section:

"1. Construction projects approved in writing by the Facilities Division of the War Industries Board.

"2. All buildings, structures, roadways, plant facilities or other construction projects of every nature whatsoever undertaken by the United States Railroad Administration, or by any rail or water transportation company, organization or utility (whether or not under the direction of such administration), or by the American Railway Express Company, or by the owner or operator of any telegraph or telephone line.

"4. The construction, maintenance, improvement or development by federal, state or municipal authorities of highways, roads, boulevards, bridges, streets, parks and playgrounds.

"5. The construction, extension, improvement, maintenance or repair of any public utility, including water supply systems, sewer systems, light and power facilities, and street and interurban railways.

"6. The construction, extension or repair of all irrigation and drainage projects.

"7. Construction projects connected with the extension, expansion or development of mines or every character whatsoever, or connected with the production and refining of mineral oils and of natural gas.

"9. The construction of new or the alteration or extension of existing schoolhouses, churches, hospitals and federal, state or municipal buildings involving in the aggregate a cost not exceeding \$25,000.

"10. The construction of new buildings or structures not embraced in any of the foregoing classifications, or the repairs or additions to, or alterations or extensions of, existing buildings or structures, in either case involving in the aggregate a cost not exceeding \$10,000.

"11. The construction of new buildings or structures not embraced in any of the foregoing classifications, or the repairs or additions to, or alterations or extensions of, existing buildings or structures, in either case involving in the aggregate a cost not exceeding \$25,000; when approved in writing by the State Council of Defense or its duly authorized representatives.

"12. Buildings begun prior to Sept. 3, 1918, where a substantial portion of the building has already been constructed."

STREET CLEANING AND REFUSE DISPOSAL

Voters Defeat Plan to Buy Garbage Plant.

Long Branch, N. J.—A referendum on the question of buying the garbage plant of the Seaboard Utilization Company for \$50,000 was defeated by a vote of 5 to 1 at the recent election. Majorities were returned against the purchase in each of the eleven voting districts. The garbage company, in a pre-election statement, figured that the plant cost it in normal times \$65,000, while the board of commissioners, all opposed to paying the price, claimed that an inventory will not show \$25,000, or to be exact, \$19,313.15. The garbage company's contract with Long Branch runs for three years. Its president has made several attempts to get an increase over the contract price, but had failed. The garbage company receives \$11,000 for this year and \$12,500 annually for the next three years.

War-Time Street Cleaning in Capital.

Washington, D. C.—Large growth in population due to the war activities, increased traffic and scarcity of labor made the operations of the street cleaning department of the municipal government a more difficult problem than during any year in the history of the local government, according to the report of Morris Hacker, superintendent of the service, filed with the commissioners for the fiscal year ended June 30, 1918. However, the report says, even with these difficulties to face, the standard of the work has been kept up under most trying difficulties. By reason of the lack of men the department has been unable to maintain its policy of increasing the area of streets cleaned by the hand patrol or "white wings," making it necessary to increase the area of machine-cleaned territory. Oiling of macadam and other suburban roadways with emulsified road oil, for the purpose of laying the dust, was discontinued, because it was impossible to secure necessary supplies at anything like a reasonable price. Shortage of labor in the face of the hard winter last year, with heavy and frequent snowfalls, made it necessary to call out every laborer connected with the city's government to remove the snow and ice from the streets and pavements. The total expended for this work amounted to \$30,337.64, an increase of \$24,827.29 over the preceding winter, when the cost for this work amounted to only \$5,550.35. A comparison of the amount of work done by the department with that of the preceding year shows a decrease of all classes except motor flushing of the streets. Increased cost of material and supplies and the difficulty experienced in obtaining the material and supplies were factors in reducing the general scope of the work. During the year a contract for removal of ashes was let to the J. W. Bean Contracting Company for one year at \$78,300; for refuse, to John G. Faircloth, for three years, the first year at \$54,000, second year, \$35,400, and third year at \$15,000.

NEWS OF THE SOCIETIES

Nov. 12-16.—NATIONAL TAX ASSOCIATION. Annual conference, St. Louis, Mo. Secretary, Fred R. Fairchild, Yale University, New Haven, Conn.

Nov. 14-15.—WASHINGTON STATE GOOD ROADS ASSOCIATION. Meeting to be held at Pasco, Wash.

Nov. 14-16.—ASSOCIATION OF URBAN UNIVERSITIES. Annual convention, Boston, Mass. Secretary, Frederick B. Robinson, College of the City of New York, N. Y. C.

Nov. 19-21.—SOUTHERN APPALACHIAN GOOD ROADS ASSOCIATION. Meeting to be held at Asheville, N. C.

Nov. 20-21.—NATIONAL ASSOCIATION OF GENERAL CONTRACTORS. Organization meeting, Chicago. Temporary headquarters, 51 Chambers St., New York City.

Nov. 20-22.—NATIONAL MUNICIPAL LEAGUE. Special Conference on Reconstruction, Rochester, N. Y. Secretary, Clinton Rogers Woodruff, North American Bldg., Philadelphia, Pa.

Nov. 21-22.—WASHINGTON STATE GOOD ROADS ASSOCIATION. Annual convention, Pasco, Wash. Secretary, Frank W. Guilbert, Spokane, Wash.

Nov. 25-27.—NATIONAL HOUSING ASSOCIATION. Annual convention at Boston, Mass. Headquarters, 105 E. 22d St., New York City.

Nov. 26-28.—UNION OF MANITOBA MUNICIPALITIES. Annual convention, Winnipeg, Man. Secretary, Robert Forke, Pipestone, Man.

Dec. 2.—HIGHWAY INDUSTRIES ASSOCIATION. Convention at Chicago, Ill. Headquarters, 1410 H St., N. W., Washington, D. C.

Dec. 2-6.—AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Convention at Chicago, Ill. Acting secretary, A. Dennis Williams, Morgantown, W. Va.

Dec. 3-6.—AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Annual meeting, New York, N. Y. Secretary, 29 West 39th St., New York City.

Dec. 4-5.—ASSOCIATION OF STATE HIGHWAY OFFICIALS and HIGHWAY INDUSTRIES ASSOCIATION. Joint congress, Congress Hotel, Chicago. Secretaries, W. D. Uhler and S. M. Williams, Washington, D. C.

Dec. 9-11.—PORTLAND CEMENT ASSOCIATION. Meeting to be held at the Hotel Biltmore, New York City. Headquarters, 111 W. Washington street, Chicago, Ill.

Dec. 27-Jan. 2.—AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Annual convention, Boston and Cambridge, Mass. Secretary's office, Smithsonian Institute, Washington, D. C.

Jan. 13.—AMERICAN INSTITUTE OF CONSULTING ENGINEERS. Annual meeting, New York City. Deputy secretary, E. Etchelle, 35 Nassau St., New York City.

Feb. 18-21, 1919.—AMERICAN ROAD BUILDERS' ASSOCIATION. Sixteenth annual convention and Ninth American Good Roads Congress under the auspices of the A. R. E. A., Hotel McAlpin, New York, N. Y. Secretary, E. L. Powers, 150 Nassau street, New York, N. Y.

New York State Waterways Association.

The New York State Waterways Association held its ninth annual convention in the Chamber of Commerce building, Brooklyn, N. Y., Nov. 7 and 8, under the auspices of the Brooklyn chamber of commerce.

Among the papers presented and addresses delivered were the following:

The Hon. Joseph Bailey, Patchogue, "South Side Long Island Waterway Improvement"; Mr. Addison Wheeler, "The Port of New York After the War"; General W. W. Wotherspoon, state superintendent of public works, "Barge Canal Operation"; Senator William M. Calder, "National Waterway Operation"; Mr. Edward F. Murray, Troy, "How May Barge Canal Transportation Be Promoted?"

Mr. Lewis W. Francis, "Transportation of Iron Ore on the Champlain Canal"; "The Opening and Completion of the Barge Canals"; the Hon. George D. Pratt, New York, "Development of New York Water Powers"; Mr. Floyd L. Carlisle, Watertown, "Storing and Using the Waters of the Adirondacks"; the Hon. George F. Thompson, chairman of the legislative power investigating committee, "The Development of Water Power."

Mr. Wilfred H. Schoff, Philadelphia, secretary of the Atlantic deeper waterways association, "The Atlantic Costal Canal"; the Hon. Frank M. Williams, state engineer and surveyor, "The Barge Canals"; Mr. Frank E. Williamson, Buffalo, "Rail and Water Rates of Transportation"; Mr. Clifford Lewis, Jr., Utica, "Utica's Waterway Problems"; Mr. William S. Pickard, "The Coney Island Ship Canal."

Washington State Good Roads Association.

The Washington State Good Roads Association will hold its annual con-

vention at Pasco, Wash., Nov. 21 and 22. Among the features on the program will be an address by senator P. H. Carlyon, of Olympia, on "How to Obtain a State-Wide Road System." R. K. Tiffany, United States engineer and president of the Yakima chamber of commerce, will speak on "Preparedness for Peace."

Capt. I. M. Howell, secretary of state, will lead the discussion on "Why Not Tax the Automobile for Both Construction and Maintenance of All Roads in the State"; C. L. Mackenzie, of Colfax, will start off the discussion on "Shall We Construct Roads Without Provision Made to Maintain Them?" Hon. R. H. Thomson, of Seattle, will speak on "Types of Highways for our State-Wide System," and Ben F. Hill, of Walla Walla, will speak on "Highways of Washington."

National Housing Association.

The seventh annual conference on housing, under the auspices of the National Housing Association, will be held in Boston, on Nov. 25, 26 and 27. Headquarters will be at the Copley Plaza hotel. The secretary of the association is Lawrence Veiller, 105 East 22d street, New York City.

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

A reinforced concrete BRIDGE is to be built by La Salle county, Sheridan, Ill. The consulting engineer for the structure is F. C. Buren.

Fairfield, Tex., plans to build reinforced concrete BRIDGES and CULVERTS, following plans by the consulting engineers, Bryant & Huffman.

Bids have been received for the construction of a SEWAGE DISPOSAL PLANT for the infirmary at Akron, O., according to plans prepared by the consulting engineer, M. P. Lauer.

The Kingman Colony Irrigation District, Malheur, Ore., is to construct a DRAINAGE SYSTEM, plans being prepared by the consulting engineers, McGee & Tucker.

The State Hospital, Kalamazoo, Mich., is to build a 100,000-gallon REINFORCED CONCRETE RESERVOIR according to plans prepared by the consulting engineer, M. J. C. Bellingham.

Garnett, Kan., is to make WATERWORKS IMPROVEMENTS, including a pump pit and house on Cedar Creek, according to plans prepared by the consulting engineering firm of Black & Veatch.

Pulaski County, Little Rock, Ark., is to construct a 2,000-foot reinforced concrete BRIDGE, to cost about \$650,000. Plans for the structure have been completed by the consulting engineering firm of Hedrick & Hedrick.

Mississippi county, Osceola, Ark., is to build 46 miles of graded earth ROADS, according to plans prepared by the consulting engineering firm of Pride & Fairley.

Douglas county, Omaha, Neb., is to build a HIGHWAY and is having plans prepared by A. Adams Co., consulting engineers.

WATERWORKS IMPROVEMENTS are to be made in Altus, Okla., to cost about \$103,000, plans having been prepared by the Benham Engineering Co., consulting engineers.

Plans have been prepared by Meridian, Miss., for a steam driven PUMP-ING OUTFIT for the waterworks of 500,000-gallon capacity. The consulting engineer is X. A. Kramer.

Contract has been awarded for the construction of an intercepting SEWER by the Essex Border Utilities Commission, Windsor, Ont., planned by the consulting engineers, Morris Knowles, Ltd.

London, Ont., plans to build a RESERVOIR and WATERMAINS, also a SEWAGE PUMPING PLANT and SEWAGE DISPOSAL WORKS, according to plans prepared by the consulting engineer, H. A. Brazier.

Ashtabula, O., has been considering the building of a WATER POWER PLANT. R. J. Walters, hydro-electric engineer, of the firm of Daniel W. Meade, consulting engineer, has been in consultation with the city officials.

INDUSTRIAL NEWS

Cast Iron Pipe.—The sudden cessation of hostilities has left the iron and steel industry in uncertainty as to the immediate future. It is expected that the easing of priorities and the lifting of the ban on municipal improvements will soon result in orders for pipe. Meanwhile the quotations are: Chicago, 4-inch, \$69.80; 6-inch and larger, \$66.80; Class A, \$1 extra. New York: 4-inch, \$70.70; 6-inch and larger, \$67.70; Class A, \$1 extra.

War Industrial Restrictions Removed.

With the signing of the armistice with Germany, the War Industries Board and the Fuel Administration has begun work toward the rehabilitation of many of the so-called less essential industries, the output of which has been temporarily curtailed to assure material, fuel, and labor for the war plants. It is the expectation to lead up gradually to a return to something like pre-war conditions, but officials feel that too sudden a change would not only result in a severe shortage of materials in certain directions, but would disturb labor and transportation facilities to a dangerous degree.

The plans announced were formulated after consultation with the regional experts of the War Industries Board and the Council of National Defense. This comment was made:

"The War Industries Board began today a modification of the restrictions whereby it has controlled American industry in the interest of the nation's war program. As laid down by chairman Baruch in a published announcement Nov. 8, it will be the policy of the board gradually to lift various restrictions and curtailments, with the view of bringing about as promptly as possible a return to normal conditions. In the modification of the curtailments imposed on the manufacture of certain commodities, the board has adopted the method of reversing the processes of the priorities committee, and there is announced a list of commodities in respect to which the curtailment is modified.

"Hearty approval has been given by the Council of National Defense to modifications of the regulations governing no-war construction, and the council requested that immediate and widespread publicity be given them so that, to the extent now permitted, building operations might be speedily resumed."

The Fuel Administration made this announcement: "The first revision of the curtailments upon the use of coal pursuant to the halting of the nation's war programme was announced today by the United States Fuel Administration.

"All limitations on the use of fuel in the production of building materials, including brick, cement, lime, hollow tile and lumber were ordered removed by fuel administrator Harry A. Garfield. This action was co-ordinate with the decision of the War Industries

Board, announced today, in removing restrictions on the production of building materials."

It also stated that the rulings of the War Industries Board in connection with the increased production of non-war commodities other than building materials will be approved by the Fuel Administration in instances where the Fuel Administration has reduced the fuel supply of the industries involved to a point which conflicts with the new program of the War Industries Board.

The official order says that restrictions are to be cut down by half on a number of products which include road machinery, coal, gas, oil and electrical heating devices, scales and balances, pneumatic automobile tires and passenger automobiles.

The statement says: "Nothing herein contained shall be construed to release any industry or manufacturer from the strict observance of the rules and regulations of the conservation divisions of the War Industries Board as applicable to such industry or manufacturer.

"Dealers (wholesale and retail) in raw materials, semi-finished and finished products are hereby relieved from the obligation to give and require pledges relating to such commodities, notwithstanding any provision for pledges in any order or circular heretofore issued by the priorities division, and notwithstanding any stipulation in any pledge that they will require pledges from those who buy from them for resale; provided, however, building materials and other products shall not be sold and delivered for use in connection with any non-war construction projects save those for which no permit or license is required under priority circular No. 21, as revised by section first hereof, or those authorized by permits or licenses issued in pursuance of said circular; provided further, manufacturers will continue to give pledges in accordance with the terms and circulars heretofore issued, and comply with all pledges heretofore or hereafter given, save that they are hereby relieved from the provisions in such pledges as require manufacturers to exact pledges from those who buy them for resale.

"The priorities division of the War Industries Board, will, as far as practicable, assist industries in procuring materials, fuel, transportation and labor to enable them to increase their operations to normal limits as rapidly as conditions may warrant. Precedence must, however, be given to stimulate and increase the production of cargo ships and supply the requirements of the army and navy of the United States, as well as to provide for this nation's proper proportion of the enormous volume of materials, equipment and supplies as have been required for the reconstruction and mobilization of the devastated territories of Europe. Precedence must also be given to such activities as will tend to stimulate the production of foods and feeds, of coal, of natural gas, of oil

and its products, of textiles and clothing, and of minerals; and to provide for deferred maintenance, additions, betterments and extensions of railroads, telegraph and telephone lines, and other public utilities, and to permit and stimulate the intensive development of inland waterways."

The Tiffin Wagon Co., Tiffin, O., has suffered a sad loss through the death of W. K. Shelly, its vice-president and general manager, which occurred Nov. 3. Mr. Shelly was 74 years old and was widely known among those doing business with the company.

Mr. Shelly was born in Washington, Ill. His boyhood was spent at Peoria, Ill., where he first started in business. He came to Tiffin in 1888 as general manager of the American Strawboard Company. He began his career here by erecting the plant of that company. It was one of the most prosperous concerns in the city during the years of his management.

After leaving this business, he spent several years in Chicago and New York, returning to Tiffin in 1899, at which time he organized the Tiffin Wagon Company, which took over the plant of the Tiffin Agricultural works. He built up and placed the concern among those of first rank in Tiffin. From a small institution doing a limited wagon business it has grown under his management to be an organization building one of the largest lines of both horse drawn and motor driven vehicles in the United States today. The line, which is widely and favorably known to municipal officials, includes flushing machines and sprinklers, both horse and motor driven, garbage trucks, all types of motor trucks, sanitary carts, dump wagons, contractors' vehicles, etc. Through his untiring activity, the plant has expanded and now is turning out a large government contract.

Mr. Shelly's business career is one to which his friends point with pride. It is a record unblemished and that of a man of the acutest business perspective, of the strictest honesty and integrity. Mr. Shelly is survived by three daughters, one granddaughter and four grandsons.

Stegeman Truck Now the Parker.

It is announced that the Stegeman Motor Car Co., of Milwaukee, Wis., has been succeeded by the Parker Motor Truck Co. In the future the machine manufactured by the company will be marketed under the name "Parker."

The Marden, Orth & Hastings Corporation, 61 Broadway, New York City, announces the appointment of George N. Moore as sales manager for Moh-tan, which is used as a road-binding material. He takes charge of the company's new foundry supply department in the sale of the Moh-tan products. Mr. Moore was for eleven years sales manager of the road-binder and foundry departments of the Robeson Process Co., which departments he developed. H. M. Handy was appointed to assist Mr. Moore.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
O., Minerva	10 a.m., Nov. 18..	Improvement of street, including excavation, straight and circle curbing, block paving, relaying old paving, etc..	W. C. Schick, Bd. of County Commissioners.
Neb., Omaha	9 a.m., Nov. 19..	Improvement of streets.....	City Engr.
Ala., Vernon	Nov. 22..	Grading, surfacing and draining state road.....	W. S. Keller, State Hwy. Engr., Montgomery, Ala.
Ind., Fort Wayne	10 a.m., Dec. 4..	Construction of two macadam roads in Madison and Eel River Townships.....	Will Johnson, Co. Aud.
SEWERAGE.				
O., Minerva	10 a.m., Nov. 18..	Constructing storm water sewers and inlets.....	W. C. Schick, Bd. of County Comrs.
Minn., Worthington	1 p.m., Nov. 19..	Construction of a mechanical gravity filter plant of 80,000 gal. daily capacity.....	J. G. Robertson, Secy., Southwestern Minnesota Sanatorium Comm.
Pa., Ardmore	noon, Nov. 26..	Complete installation of a 125-hp. electric motor and centrifugal pump, for pumping sewage.....	Comrs. Office, Lower Merion Twp.
Ont., Atwood	noon, Nov. 30..	Construction of drain system.....	Geo. Lockhead, Twp. Clk.
Ind., Fort Wayne	10 a.m., Dec. 4..	Constructing two macadam roads in Madison and Eel River townships	Will Johnson, Auditor.
WATER SUPPLY.				
N. C., Wilmington	noon, Nov. 18..	Improvement and enlargement of waterworks pumping station, involving one 5-million gal. centrifugal pump; one steam driven turbine engine; one reinforced concrete reservoir with brick baffle walls, sump pit, outlet valve, and drain pipe; four filter units, each having half million gal. daily capacity; suction and discharge pipe.....	J. N. Johnson, City Engr.
Minn., Worthington	Nov. 19..	Constructing filter plant for Southwestern Minnesota Sanitarium.	L. P. Wolfe, Engr., 1000 Guardian Life Bldg., St. Paul, Minn.
Cal., San Francisco	Nov. 25..	Construction of 2,000,000-gal. water reservoir, to cost about \$55,000	Bur. of Yds. & Docks, Navy Dept., Washington, D. C.
Mich., Port Huron	11 a.m., Nov. 20..	Furnishing two motor-driven centrifugal pumps, each 6,000,000 gal. capacity in 24 hours; cast iron water pipe fittings; one 24-in. Venturi meter with indicator, register and recorder; one 24-in., one 20-in. and two 16-in. vertical water valves; valves and pump fittings, etc.....	Loran C. Elliott, City Clk.
N. J., Newark	10.30 a.m., Nov. 21..	Furnishing nine 26-in. steel "I" beams, 90 lbs. to the foot, 38 ft. 4 in. long.....	Bureau of Water, 317 Halsey St., Newark, N. J.
Wash., Seattle	10 a.m., Nov. 22..	Construction of a steel water tank, 500,000 gal. capacity, and supporting tower.....	C. B. Bagley, Secy., Bd. of Pub. Works.
Cal., San Francisco	Nov. 25..	Construction of 2,000,000-gal. water reservoir, to cost about \$55,000.....	Bur. of Yds. & Docks, Navy Dept., Washington, D. C.
Miss., Greenville	10 a.m., Dec. 10.	Furnishing and installing pumping machinery and appurtenances for duplicate pumping units having a combined capacity of 80,000 G.P.M. against low heads.....	Morgan Engineering Co., Memphis, Tenn.
LIGHTING AND POWER.				
N. Y., New York	Nov. 25..	Furnishing and installing two 15-ton electric traveling bridge cranes (Spec. No. 3438).....	Bureau of Yards and Docks, Navy Dept., Washington, D. C.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
D. C.	Washington	2 p.m., Nov. 22	Furnishing and installing complete steam heating systems in engine house	Chief Clk., Engr. Dept., District Bldg., Washington, D. C.
BRIDGES.				
O.	Cambridge	1 p.m., Nov. 18	Building abutments and piling sub-structure	C. L. Morehead, Engr., Court House.
MISCELLANEOUS.				
N. Y.	New York	noon, Nov. 19	Final disposition of garbage from the boroughs of Manhattan, Bronx and Brooklyn for a period of 3 years beginning Jan. 2, 1919	A. B. MacStay, Com. of Street Cleaning.
Colo.	Denver	Nov. 20	Furnishing steel check gates and single-drum gate hoist for Sun River project, Montana	U. S. Reclamation Service.
D. C.	Washington	10:30 a.m., Nov. 21	Furnishing lead, asphalt and asbestos shingles, roofing felt and lumber	Maj. Flint, 24 State St., N. Y. City.
O.	Cincinnati	2 p.m., Nov. 23	Furnishing wicket irons for Ohio River dam	U. S. Engr. Office, 405 Custom House, Cincinnati
N. C.	Monroe	11 a.m., Nov. 25	Construction of towers to cost about \$3,000,000	C. W. Parks, Chief Bur. of Yds. & Docks, Navy Dept., Washington, D. C.
Porto Rico	Miramar	10 a.m., Nov. 25	Construction and installation of a garbage and refuse incinerator plant	R. H. Tood, Mayor, San Juan, P. R.
D. C.	Washington	10:30 a.m., Nov. 25	Furnishing repair shop equipment, staybolt iron, nuts, pipe vices, stopcock boxes, fire brick, micante tubing, rubber brushings, ultramarine blue, supplies for water purification plants and magnesia boiler, lagging, etc.	A. L. Flint, Gen. Purch. Agt., Panama Canal, Washington, D. C.
Ont.	Atwood	2 p.m., Nov. 30	Construction of drain	Geo. Lochhead, Twp. Clk., Elma
N. Y.	Albany	noon, Dec. 3	Completion of canal, to cost about \$327,000	W. W. Wotherspoon, Supt. of Pub. Wks., Capitol, Albany, N. Y.

ROADS AND STREETS

Camp Kearny, Cal.—About \$50,000 worth of new road construction in this cantonment which was authorized early last month will be of concrete instead of macadam construction. Preliminary work on construction of the new thoroughfares has begun. The new roads are to link up the camp system of paved highways with the concrete road from San Diego completed last July, to give a paved approach to the base hospital, and to give a paved road into the quartermaster warehouse district. A short stretch in the civic center also is to be paved.

San Francisco, Cal.—The North Central Improvement Association is endeavoring to gain the approval of the Government for street repairs in the wholesale commission district and near the water front, on the ground that it is essential for war purposes to keep these streets in good repair.

Santa Ana, Cal.—City rejected bid paving Edinger St. from Main to Bristol Sts., concrete. C. C. Bonebrake, city engr.

Stockton, Cal.—City Clerk G. W. Pulich will receive sealed bids Nov. 15 for \$101,545 street bonds.

Bridgeport, Conn.—Bids received soon for paving various streets with asphalt or bituminous. J. A. McElroy, city engineer.

Chicago, Ill.—Hanna Engr. Co., 1767 Elston Ave., taking bids paving 2,000 sq. yds. concrete portland cement, \$6,000. Engr., Edw. Hancock, 2047 Ogden Ave.

Brookville, Ind.—The commissioners of Franklin county failed to receive any bids for the construction of a macadam road in Brookville township advertised for sale Nov. 4.

Jeffersonville, Ind.—Clark county commissioners received no bids for the construction of a macadam road in Washington township.

Fort Wayne, Ind.—Commissioners of Allen county receiving bids in December for the construction of two macadam roads in Madison and Eel River townships. Will Johnson, auditor.

Cassapolis, Mich.—For building 7 mi. Dixie highway, from Dowagiac to Niles, Cass county plans to issue \$75,000.

Coldwater, Mich.—Branch county voted \$70,000 bonds to build roads.

West Point, Miss.—Clay County has sold \$15,000 road district No. 2 bonds to the First Savings Bank of West Point. L. J. Howard, county clk.

Moberly, Mo.—Randolph county commissioners plan roads, culverts, grading, etc.

Norwich, N. Y.—Following bonds will be sold at public auction Nov. 13: Paving, \$9,565.80; sewer, \$240. City Chamberlain Edward E. Davis.

High Point, N. C.—Stacy and Braun, of Toledo, were the successful bidders for the following bonds: Street improvement, \$17,000; assessment, \$7,000. Thomas J. Murphy, city manager.

Ashland, O.—Plans are now being completed by the Richland county road authorities for the continuance of such road building by the United States Highway Council. It is proposed to construct the Lincoln Highway to the east of Mansfield with brick or concrete, 16 ft. wide.

Athens, O.—City sold to Stacy & Braun of Toledo Fern St. extension bonds, \$1,700. J. C. Edmundson, city auditor.

Bellefontaine, O.—Assurance that the Huntsville pike from the bulkhead to Lakeview would be improved if federal sanction can be produced was gained by the delegations from Lakeview, Russell's Point and Bellefontaine, at Columbus.

Brookville, O.—J. S. Smith, clerk of the council, states that the ordinance to issue bonds in the sum of \$10,000 for paving Maple and other streets has passed the council.

Cincinnati, O.—City council, Oct. 29, passed an ordinance for paving Haven St., from Forest Ave. to Ehrman Ave.

Middletown, O.—The necessary repairs on part of the road between Tylus Ave. and the bridge at Worcesters will be repaired by the city commission.

Middletown, O.—City commission adopted an ordinance authorizing the issuing \$5,000 bonds for the purpose of paying the city's portion of the cost of resurfacing Third between Clinton St. and the right of way of the C. C. C. & St. L. Railroad, by a treatment of tarvia macadam. John Kunz, clerk.

Portsmouth, O.—At a meeting of the New Boston council a resolution was passed to issue bonds to the extent of \$11,000, which will cover the property owners' share of paving of Rhodes Ave. and Lakeview Ave., in New Boston.

Okmulgee, Okla.—Capital Issues Committee approved \$800,000 bond issue to build roads in Okmulgee county. J. Liggett, co. comr.

The Dalles, Ore.—The following bonds, aggregating \$20,000, were awarded to the Oregon Life Insurance Co., Portland: \$11,500 paving at 105.31; \$8,500 bridge at 104.41.

Harrisburg, Pa.—Because the United States Highway Council has withheld approval of the projects for improving a section of State Highway Route 84, in Mill Creek and Summit townships, Erie county, and for a portion of Route 101, in Roulette township, Potter county, the State Highway Department Nov. 7 rejected the bids which were received some time ago.

Johnstown, Pa.—The United States Highway Council has given its approval for continuation of the work on the Lamb's bridge road in Adams township and the Solomon Run road in Stonycreek township. Work will be continued and rushed to completion as rapidly as labor conditions will permit. O. P. Thomas of this city is township engineer in each case.

Pennsylvania voted in favor of issuing bonds to the amount of \$50,000,000 for roads. The proposition now goes before the legislature.

Richmond, Va.—G. P. Coleman, state highway commissioner, will soon take bids for sand and clay road, \$25,000.

Richmond, Va.—Administrative board orders repairs in Federal street, between St. John and St. James. City Engineer Bolling.

Spokane, Wash.—Approval of the plans for the completion of the mine gap near Dean in the Pend Oreille highway, between Spokane and Newport, was received by H. C. Doolittle, engineer in eastern Washington for the state highway department, from Highway Commissioner Allen. The work has been held up more than a year pending an agreement with the Great Northern Railroad. The work will begin at once. Contractors now are preparing to submit bids. The completion of the road will eliminate a bad crossing of the S. F. & N. at Chattaroy, and will also obviate the necessity of the present detour. The heaviest part of the work will be the excavation under the tracks to eliminate the grade crossing. The Great Northern will put in piles temporarily and will ultimately construct an overhead crossing, with concrete abutments. The 1917

legislature appropriated \$40,000 for the completion of the Pend Oreille highway. About half this amount was expended in surfacing the road last year, the rest being held back to pay the cost of work now approved.

St. John, N. B.—Work on paving several streets will be commenced shortly. Cost, \$226,000. Engineer, Geo. N. Hatfield.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Bridgeport, Conn.—*Warren Bros., 142 Berkeley St., Boston, Mass., \$4,850, \$5,700, \$6,700 and \$7,100, paving Brewster St., Crescent, South and Palisade Aves., involving 14,000 sq. yd. bituminous.

Boston, Mass.—*B. E. Grant, for resurfacing, rebuilding, repairing and repaving tracks on Atlantic Ave., between Summer and Broad Sts., by the trustees of the Boston Elevated Railway Co., on Oct. 29.

Hastings, Neb.—*Watts Construction Co., for paving 1 mile Second St. between east line of Baltimore Ave. and west line of corporation limits, vertical fibre brick, 30 ft. wide.

Beverly, N. J.—*H. B. Miller, Edgewater Park, about \$10,000, building concrete curbs and gutters in Beverly township, Burlington county, Mt. Holly.

Albany, N. Y.—The Leonard Paving Co., of New York City, lowest bidder for paving the barge canal terminal site at Long Island City, \$53,579. Superintendent of Public Works Wotherspoon.

Winston-Salem, N. C.—*Noll Construction Co., 8 East Sixth St., Chattanooga, Tenn., about \$34,200, resurfacing Tryon St. from Sixth to Morehead St. and Trade St. from Mint to College St. Work involves resurfacing 30,000 sq. yds. of old bitulithic pavement with 1½-in. sheet asphalt. City council.

Bellaire, O.—*Clifford & Shaunafeet, for paving South Belmont St., at \$2.13 per sq. yd.

Martin's Ferry, O.—*J. G. Unkerfer & Co., care National Surety Co., 115 Broadway, N. Y. City, at \$2,000, approaches at P. O. building, Martins Ferry, by U. S. Government.

Allentown, Pa.—*Butz & Clader, 500 Hamilton St., for concrete road and sidewalk, \$10,000, near here, by Penn Trogon Powder Co., D. J. Williams, chief engr., in charge, 800 Hunsicker bldg.

Philadelphia, Pa.—*Geo. F. Pawling & Co., 1432 S. Penn Sq., this city, for constructing pavement, pier and boat house at aircraft factory, at \$136,000.

Hampton Roads, Va.—*John Gill & Sons, Cleveland, O., for road, walk, sewer and fresh-water piping and electrical feeder and distribution system at the naval training camp and hospital at approximately \$1,000,000.

Grafton, W. Va.—*Vang Construction Co., Cumberland, Md., for yard improvement and grading trackage, \$200,000, by B. & O. R. R. Co., B. & O. bldg., Baltimore, U. S. Ry. Adm., W. G. McAdoo, dir. gen., Washington, D. C.

Milwaukee, Wis.—*Joseph B. Forrestal Co., for furnishing material and constructing sewer in W. 19th St., from Lake to Franklin, and Teutonia Ave. from Franklin to Nash Sts., at \$2.73 per ft., and *M. Synovitch for constructing sewers in 14th and 15th Sts., from Lake to Atkinson Ave., \$1.57 per ft.

SEWERAGE AND SANITATION

Evansville, Ind.—Dept. of public works adopted resolution, Oct. 25, to construct a local sewer in and along Third Ave. Walter F. Wunderlich, clerk.

Newark, N. J.—Bids rejected, sewer, southerly and northerly portion sections 21 and 28 of the Prospect and Brown St. branches intercepting sewer. Chief engr., Wm. M. Brown, care Passaic Valley Sewerage Comm., B. W. Terlinde, chm., Essex bldg.

Long Beach, N. Y.—Village sold Nov. 5 to Geo. B. Gibbons & Co., of New York, sewer bonds \$27,500. Agnes Bracken, village clk.

Niagara Falls, N. Y.—City Manager Edwin J. Fort will receive sealed bids

Nov. 27 for the following semi-annual bonds: \$26,500 sewerage, \$15,000 building and \$13,500 park.

Norwich, N. Y.—See "Streets and Roads."

Rochester, N. Y.—See "Miscellaneous."

Akron, O.—Following recommendations of William H. Ditton of the state sanitary engineer's office plans for a 4,900 ft. strip of sewer pipe along the railroad at the Goodyear factory were submitted to City Engineer Zeisler by the sewer survey department. The proposed sewer is between Martha Ave. and Massillon Rd. It is intended to improve the sanitary condition of the water used for commercial purposes by factories along the Little Cuyahoga. The estimated cost was \$12,600.

Delaware, O.—City Engineer George S. Irwin has prepared plans and the city, E. W. Mettler, auditor, is about ready for bids for a sanitary sewer in Canning St., 1,000 ft. 8-in. sewer, catch basins, etc.

Marion, O.—Bids have been rejected for the \$14,000 sewer in the North East sewer district No. 2.

Mansfield, O.—The Richland Savings Bank, of Mansfield, has purchased at par the following bonds: West Park boulevard sewer, \$5,000; Diamond and Ford streets sewer, \$4,700; Sturges avenue sewer, \$550. C. E. Rhoads, city auditor.

Ardmore, Pa.—For furnishing material and machinery in connection with the complete installation of a 125-h.p. electric motor and centrifugal pump for pumping sewage at Mill Creek pumping station. Robley E. Warner, superintendent, commissioners of Lower Marion township, taking bids.

Waco, Tex.—To be connected with Camp MacArthur, city considers building sewer lines; about \$80,000. G. B. Gurley, city engineer.

Amherstburg, Ont.—The construction of a tile drainage system considered by the township council, \$20,000. A. C. Mallou, township clerk.

Hamilton, Ont.—City council will soon take bids for the construction of sewers. E. R. Grey, engr.

St. Catharines, Ont.—City council considering the construction of a drainage system. L. S. Bessey, clerk.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Niles, Mich.—*Geo. A. Harron, J. M. S. bldg., South Bend, Ind., for 12-in. sewer pipe in Niles. Board of public works.

Newark, N. J.—*Booth & Flynn, 17 Battery Pl., New York City, sewer, southerly section 29 of Brown St. branch intercepting sewer. Passaic Valley Comrs., B. W. Terlinde, chm., Essex bldg.; chief engr., Wm. M. Brown.

Akron, O.—Koegel, Walsh Construction Co., Akron, \$12,768; H. Fouse, Akron, \$15,102; D. Bowers, Akron, \$15,468, bidders for building disposal plant for infirmity, to include two 65-ft. filter beds and one 2-story tank 15 ft. sq., in Summit county. Work involves 2,500 cu. yds. excav., 75 cu. yds. reinforced concrete, 2,000 cu. yds. sand and gravel for filter beds, 1,300 lbs. reinforced steel, 13½ cu. yds. plain concrete, 385 sq. yds. waterproofing, 4 manholes, 2 c.-i. pipe siphons, 1,800 ft. 6-8 in. vitrified pipe, 300 ft. 4-in. drain tile, 125 ft. 6-in. c.-i. pipe, and one 6-in. gate valve. M. P. Lauer, 425 Ohio Bldg., engr.

Geary, Okla.—*McIntosh-Walton Engineering Co., Oklahoma City, for constructing sewerage system at approximately \$30,000.

Portland, Ore.—*Edward Saneberg was low bidder for constructing cement pipe sewer in Henry Ave., from E. 13th to Milwaukee St., at \$2,017.

Duquesne, Pa.—*Carnegie Steel Co., at \$7,584, for sanitary sewers in various streets. R. B. Dell, city engr., City Hall.

Hampton Roads, Va.—See "Streets and Roads."

London, Ont.—*John Haymar & Sons, 423 Wellington St., have the general contract for main sewer, \$11,000. Department of Public Works, Ottawa.

Windsor, Ont.—*Shand Engineering Co., of Sault Ste. Marie, Ont., for construction of the south intercepting sewer for the Essex Border Utilities Commission, \$115,000. Morris Knowles, Ltd., Windsor, consulting engineers.

WATER SUPPLY

San Francisco, Cal.—Bureau Yards and Docks, Navy Dept., Washington, D. C., lets contract soon for building 2,000,000-gallon reinforced-concrete reservoir at Naval Training Station, Verba Buena Island, Specification 3583, about \$55,000.

Augusta, Ga.—Council considers improving and enlarging Camp Hancock water system, for \$360,000. Improvement consists of new pump, building clear water basin, pump wells, coagulating basin, lavatory equipment, booster pump for filter plant for supplying Camp. N. Winfield, city engineer.

Picabo, Idaho.—Comrs. Baline county granted franchise to Kilpatrick Bros. to build and operate water works system here. About \$25,000.

Decatur, Ill.—City receiving bids, Nov. 11, for the sale \$225,000 water bonds. Jerome J. Heger, city clerk.

Witt, Ill.—City has sold water works bonds, \$16,000, authorized at an election in June to Wm. R. Compton Co., of St. Louis. H. L. Harris, city clerk.

Garnett, Kan.—City soon let contract furnishing labor and material for building pump pit and house on Cedar Creek, near Garnett. Work involves 340 cu. yds. earth excav., 80 cu. yds. rock excav., 126 cu. yds. concrete, 400 lbs. c.-i. wall pipe, 710 lbs steel, I-beam and angle lntels, 9,000 brick, etc. Piping and valves to be furnished by city. F. S. Mitchell, city clerk. Black & Veatch, Interstate Bldg., Kansas City, Mo., engr.

Beverly, Mass.—City has sold an issue of water bonds to the amount of \$11,000 to Blodget & Co., of Boston. Percy A. Wallis, city treasurer.

Detroit, Mich.—City soon lets contract for low-lift pumping station substructure, discharge conduit and miscellaneous work at water works. R. Winthrop Pratt, consulting engineer, Hippodrome Bldg., Cleveland, O.

Kalamazoo, Mich.—State Hospital plans to build 100,000 gal. reinforced concrete reservoir. M. J. C. Bellingham, Press Bldg., engr.

Blwabik, Minn.—The proposition to issue water works bonds to the amount \$50,000 was successful at an election Oct. 24.

Hattiesburg, Miss.—The water works \$25,000 bonds issued recently were purchased by Weil, Roth & Co., of Cincinnati.

St. Louis, Mo.—Bids about Nov. 22, cleaning about 100 miles 6-20-in c.-i. water mains, about \$100,000. Board Public Service, E. E. Wall, city engr.

Oswining, N. Y.—The National City Co., of New York, was the successful bidder for the refunding water bonds, \$100,000. James Bedell, supt. board water comrs.

Plattsburg, N. Y.—City plans to ask federal government for permission to issue \$20,000 worth of refunding water bonds. City Clerk Child.

Alliance, O.—City has sold to Seasongood & Mayer, of Cincinnati, water extension bonds, \$11,000. Chas. O. Silver, city auditor.

Steuenville, O.—City council passed an ordinance authorizing the director of service to install two new motors for the new filtration plant at a cost of \$1,600.

Troy, O.—Water works bonds to the amount of \$22,500 was sold by the city to Prudden & Co., of Toledo. Chas. T. Rannels, city auditor.

Cushing, Okla.—Citizens voted Oct. 29 in favor of issuing \$150,000 water works bonds.

Patton, Pa.—Borough voted Nov. 5 in favor of the proposition to issue water works bonds, \$60,000. J. Fred Blankenhorn, clerk.

Hampton Roads, Va.—Expenditure of \$3,600,000 in the development of the war supply in the Hampton Roads district has been authorized, the war department announced. The work is divided into four projects. The "Portsmouth water development" includes raising the dam at Lake Cahoon and the installation of additional pumping equipment and pipe lines, including a 29-inch main across the rivers and Berkeley to connect with the Norfolk distribution system. This work will cost \$1,800,000. Another development, to cost \$1,100,000, will be at Orianna, to supply an increased volume of water to the various government activities in the vicinity of Newport News. The water supply at

Langley Field and Fort Monroe will be increased at an expenditure of approximately \$600,000, while the fourth project consists of additions to pumping stations No. 2 at Newport News, to cost \$150,000. The navy and war departments are to share the expense.

Green Bay, Wis.—Green Bay Water Co. plans to install 4 hydrants and 750 ft. water mains.

Florence, Wis.—Waterworks improvements considered by city. W. G. Kirchoffer, Madison.

Seattle, Wash.—Board of Pub. Wks. receiving bids for furnishing of a 50,000-gallon steel water tank with supporting tower to be erected at the intersection of W. Myrtle street and Thirty-sixth avenue S. W.

Two Rivers, Wis.—Board of public works authorized by council to lay 6-in. water pipe in public cemetery.

London, Ont.—City council contemplates the construction of water mains, \$250,000. H. A. Brazier, engr.

Springbank, Ont.—City council contemplates the construction of a 14,000,000-gallon reservoir costing approximately \$250,000.

Dodsland, Sask.—G. T. P. Ry., Montreal, Que., considering the construction of a cement reservoir, \$5,000. Address A. J. Rothwell, Melville, Sask.

Swift Current, Sask.—Town council plans construction of a cement reservoir, costing \$3,000. Bids will be called soon. J. W. Calder, engr.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Phoenix, Ariz.—*Layne & Bowler Co., 900 Santa Fe Ave., Los Angeles, Cal., for furnishing about 45 pumps for wells, Salt River Valley Water Users' Association.

Key West, Fla.—Smallwood Co., 901 James Bldg., Chattanooga, Tenn., low bidders for the constructing of an addition to water and sewer system, at \$62,000.

Shreveport, La.—*Dutton & Nattin, 709 Louisiana Ave., \$9,800, building four 16-in. universal c. i. pipe lines and pile trestle over Cross Bayou at pumping station. T. L. Annis, superintendent waterworks.

Baltimore, Md.—*Union Switch & Signal Co., by the Washington, Baltimore & Annapolis Electric Railway Co., for installing block signals on its double-track line between Naval Academy, Junction, Md., 14 miles south of here, to the District of Columbia, about 15 miles.

Detroit, Mich.—Allis-Chalmers Mfg. Co., West Allis St., Milwaukee, Wis., \$53,000; De Laval Steam Turbine Co., West Clinton St. and Pennsylvania R. R., Trenton, N. J., \$53,250, bidders building and delivering f. o. b. cars at Detroit Waterworks' pumping station 1 horizontal motor driven centrifugal pumping unit, capacity 70,000 gal. per minute and 1 with 45,000 gal. capacity per minute. Board water commissioners.

Hibbing, Minn.—*Micka Asplund Co., Hibbing, for electric connections at pumping station. D. D. McEachin, sec. Water, Light, Power and Bldg. Comsn., \$7,289.

St. Cloud, Minn.—*Waterous Engine Works Co., 80 E. Fillmore Ave., St. Paul, for Waterous motor, propelled triple combination pumping engine, \$2,750.

Duluth, Minn.—*Joy Brothers, for furnishing the water and light department with a 3-ton motor truck, \$4,600. Mayor Magney.

Syracuse, N. Y.—*Central City Const. Co., 204 S. A. & K. Bldg., this city, for labor and material necessary in relaying underground water system at the Onondago Sanatorium, at \$20,845.

Akron, O.—*F. E. McShaffrey Constr. Co., 175 S. Forge St., \$12,400, for laying 3,400 lin. ft. 6-in., 5,300 lin. ft. 8-in., 4,000 lin. ft. 10-in. and 100 lin. ft. 12-in. c. i. pipe, setting 15 fire hydrants, replacing 150 sq. yd. paving and 240 sq. yd. sidewalks Contr. No. 10. Work involves 10 cu. yd. concrete and brick masonry, 7,000 cu. yd. earth excavation and 50 cu. yd. rock excavation. City council.

Newport, R. I.—*Deverall, Spencer Co., Barrett Bldg., Baltimore, Md., at \$50,830, for reservoir here. Bureau yards and docks. C. W. Parks, chief, navy department, Washington, D. C.

Kingsport, Tenn.—*Pittsburgh Filtration Company for a filtration plant about one hundred yards from the dam, which is located about seven miles in the mountains south of Kingsport, cost \$50,000. B. C. Fowles, general manager of the Kingsport Utilities.

Dallas, Tex.—Neptune Meter Co. for furnishing 500 water meters by board of commissioners.

Alexandria, Va.—New York Continental Jewell Filtration Co., New York City, for constructing five wood tanks 15x8 gravity filters and two sedimentation tanks here.

Altoona, Wis.—Wm. D. Lovell, 1415 S. E. 8th, Minneapolis, \$40,631; Wm. C. Fraser, 707 Germania Life Bldg., St. Paul, \$39,953, and Wm. Danforth, 707 Germania Life Bldg., St. Paul, \$38,499; A. Larson & Co., Eau Claire, \$33,334, bidders for water work system. C. J. Q. Hayden, city clerk.

Toronto, Ont.—*Murphy Contracting Co. and *Angelo Cavotti, 257 Euclid Ave., for water mains for the township council.

LIGHTING AND POWER

Hot Springs, Ark.—It is reported an electric line is to be built between here and Mena.

Wynne, Ark.—At a cost of \$25,000 the electric light plant is to be improved and new machinery installed.

Julesburg, Colo.—At a cost \$70,000 improvements to the municipal electric light plant are under consideration.

Worcester, Mass.—Rockwood Springler Co., 56 Harlow street, will construct a one-story boiler plant at its work about 50x70 feet.

Ogdensburg, N. Y.—At an estimated cost of \$10,000 the Ogdensburg Power & Light Co., 1 Ford St., is considering plans for the construction of a two-story brick administration building on Ford St., near Catherine St. Williams & Johnston, 40 Ford St., architects.

Murphy, N. C.—The issuance of \$25,000 electric light bonds has been authorized.

Throop, Pa.—An electric plant will be erected here by the Price-Rancoast Coal Co. Cost, \$75,000. John R. Bryden, general manager, Board of Trade Building.

San Angelo, Tex.—City commission has granted permission to C. C. McBurnett to install and operate an electric light and power plant in the St. Angelus Hotel. The system will be of sufficient capacity to furnish current for the business houses in the same blocks. Cost, about \$12,000.

Vancouver, B. C.—Press of other work and a reduced staff in the city engineer's department has led to a decision to put off until next summer at least the commencement of work on the low concrete dam which it was proposed to place across the Capilano River just below the city water works intake.

Collingwood, Ont.—The extension of hydro line to Nottawa and equip lighting system considered by the Hydro Commissioners. H. A. Curel, Fifth St., chairman.

Wapella, Sask.—W. P. MacDonald is considering the construction of electric lighting plant that will supply the town.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Harriman, Pa.—*The Easton Gas & Electric Co., for the construction of an electric power plant at its local works for operation by Merchant's Shipbuilding Corporation.

FIRE

Maple Shade, N. J.—The boro. will soon take bids on a fire house, to cost \$7,000. Eugene H. Hill is chairman of the fire committee; private plans; one story.

West Hoboken, N. J.—An ordinance has been passed authorizing the issuance of Fire Department bonds to the amount of \$9,400. Edward F. Hubener, town clerk.

Bay Shore, N. Y.—Bureau yards and docks, navy department, Washington, D. C., plans to install here Siren fire alarm system; about \$6,500. Spec. 3616. Bids will be received at navy yard here.

Brooklyn, N. Y.—Bureau yards and docks plans to install at medical supply base fire signal equipment; Spec. 3617;

about \$2,000. Bids will be received at navy yard here.

New York, N. Y.—Bureau yards and docks, navy department, Washington, D. C., plans to install at 24th St. pier fire signal equipment; about \$1,500; Spec. 3618. Bids will be received at navy yard, Brooklyn.

Tarrytown, N. Y.—This village, Frank R. Parsons, president, is contemplating the erection of a fire house at the cost of \$9,000; private plans.

Urbana, O.—The council has passed an ordinance authorizing the safety director to purchase motor fire equipment not to exceed the amount of the recent bond issue of \$15,000. The director of safety will immediately advertise for bids.

Chilhowie, Va.—Election held Oct. 29 resulted in favor of the proposition to issue Fire Department bonds to the amount of \$10,000. James D. Tate, mayor.

BRIDGES

Sacaton, Ariz.—For the construction of one reinforce concrete diversion dam and bridge on the Gila river in Arizona. no bids were received Oct. 15 by Dept. of Interior, U. S. Indian Service.

Clearwater, Fla.—Pinellas county commissioners plan \$20,000 bond issue for road and bridge construction.

Glennville, Ga.—Altamaha Bridge Co., Mills B. Lane, president, Savannah, Ga., met to perfect plans for constructing bridge across Altamaha river.

Harrisburg, Neb.—C. W. Lobdell, Gering, Neb., for constructing cement bridge on the Gering stage road on Pumpkin Creek at \$1,250.

Brooklyn, N. Y.—Demand has been made upon Commissioner John J. Delaney of the Department of Plant and Structures to repair the roadway of the Vernon avenue viaduct extending over Newtown Creek between the Greenpoint section of Brooklyn and Long Island City. Business men of Brooklyn, as well as those of Long Island City, have joined in the request for the improvement. At the same time that this matter is being agitated the business men of the two boroughs are considering plans for another viaduct across the creek which will make even a shorter route between the Brooklyn and Long Island sections. One plan is to have the viaduct located in the vicinity of Hunterspoint Ave. in Long Island City. A meeting is to be held in the near future and when the best location is decided upon. A request will be presented to Commissioner Delaney to prepare plans.

Girard, O.—The Briar Hill Steel Co. has asked the consent of the government to make a slight change in the course of the river at the foot of Liberty St., both north and south of the bridge. It is the intention of the company to construct a retaining wall along the east bank and to erect a pier and a bank line on the west side.

Middletown, O.—Proposals are called for by the county commissioners for the repair of the bridge at Worcester north of the city limits.

The Dalles, Ore.—See "Streets and Roads."

Middlebourne, W. Va.—G. F. Watson, constructing 55 ft. reinforced concrete arch bridge over Sugar Creek, Mead Dist., 60 ft. reinforced concrete arch bridge over Elk Fork Creek, Ellsworth Dist., and reinforced concrete arch bridge consisting of 2 65-ft. spans over Middle Island Creek, Centerville Dist., near Deep Valley, at \$2,800, \$5,625 and \$10,823.

Cornell, Wis.—Wisconsin road and bridge commission, A. H. Hirst, Madison, taking bids on bridge in Chippewa county; 16-ft. span, 40-ft. roadway. M. W. Torkelson, Madison, engineer.

Madison, Wis.—Dane county advertising for bids on bridge; 56.1 cu. yd. of concrete, 2,750 ft. reinforced steel. State engineer, W. M. Torkelson, Madison, Wis.

Montreal, Que.—At a cost of \$12,000, the city council has decided to have bridge girders repaired. Paul E. Mercier, engineer.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

New Britain, Conn.—*J. H. Grozier Co., 721 Main St., Hartford, Conn., retaining wall, \$2,000, by North & Judd Mfg. Co.

Detroit, Minn.—Peter Schmitz, Frazee, Minn., \$939; Hjelm Anderson, Detroit, Minn., \$1,250, bidders for building bridge No. 2997, Oct. 16. J. A. Narum, co. aud.

Big Timber, Mont.—The Security Bridge Co., of Billings, by the county commissioners of Sweet Grass county, \$14,645, to erect a new bridge at Grey Cliff.

Alberni, B. C.—W. Greenless, 407 Cordova W., Vancouver, the general contract for erection of bridge over Englishman's River for the Dept. of Public Works, Victoria.

Blairmore, Alta.—Mr. Pozzi, the general contract for erection of bridge costing \$4,000 across Old Man River for the provincial government.

Blenheim, Ont.—Leo H. Connibear, Chatham, for erection of steel and concrete bridge, \$7,000, for the township council.

Halifax, N. S.—The Standard Construction Co., Metropole Bldg., general contract for construction of two coaling bridges costing \$58,000, for the Department of Naval Service, Ottawa.

MISCELLANEOUS

Olinda, Cal.—Directors of the Happy Valley Irrigation District sold \$260,000 worth of the district's 6 per cent bonds to William Plotts of Whittier, the only bidder, for 96½ and accrued interest.

Willows, Cal.—The \$175,000 in bonds of the Princeton-Codora-Glenn Irrigation District have been sold to McDonald & Co., San Francisco, at \$475,556.50 with accrued interest.

Denver, Colo.—For furnishing steel check gates and single drum gate hoist for Sim River project, Montana, U. S. Reclamation Service, Denver, receiving bids Nov. 20. Work involves 15,000 lbs. metal.

San Francisco, Cal.—Plans for the construction of improvements on the water front were officially approved by the State Council of Defense according to John H. McCallum, acting president of the Board of State Harbor Commissioners. The improvements consist of the extension of piers 21 and 43, the building of sheds and additional cargo space on piers 41 and 33, and the construction of a \$170,000 vegetable oil terminal at Islais creek. The harbor board will advertise for bids immediately.

Washington, D. C. (Bureau of Foreign and Domestic Commerce, Department of Commerce).—A man from Guatemala, who is in the United States for a short time, desires to secure representations in general merchandise, especially agricultural implements, machinery, electrical apparatus, automobiles and accessories. Correspondence may be in English. Cash will be paid. Reference. Refer to opportunity No. 27631.

Washington, D. C. (Bureau of Foreign and Domestic Commerce, Department of Commerce).—A firm in Cuba wishes to

purchase machinery, cement, lumber, hardware, railway supplies, building supplies, etc. The firm, although interested primarily in the purchase of such supplies, will also consider the representation of American manufacturers when satisfactory arrangements can be made. References. Refer to opportunity No. 27627.

Washington, D. C.—Construction of additional buildings at Camp Kearney, Cal., in order to accommodate 9,000 additional men, will be started at once, the war department announced. The cost is estimated at \$1,924,923. The announcement also states that a road will be built leading from Camp Humphries, Va., to Acotink and is to be 2.6 miles in length and eighteen feet wide; another road, leading from Pohick to Lorton, has also been authorized and will be 4.4 miles in length and eighteen feet wide. The roads will cost \$111,040. Additional construction will be undertaken at Watervliet Arsenal, costing \$115,000, and heating equipment plant will be installed in the temporary buildings at Langley Field, Va., to cost \$79,000. Four two-story barracks for enlisted men and two barracks for officers will be added to Camp Travis, Tex., at \$77,000; and lastly a cold storage plant to be installed at Camp McArthur at \$50,000.

Washington, D. C. (Bureau of Foreign and Domestic Commerce, Department of Commerce).—A man in France is in the market for concrete mixers, stone crushers, jacks, and all kinds of construction machinery and material. Payment will be made by check at convenience of seller. Correspondence may be in English. References. Refer to opportunity No. 27652.

Tipton, Ind.—Bids received Nov. 28 by city clerk, for sale two \$3,750 city bonds. C. B. Law, city clerk.

New Orleans, La.—The \$1,100,000 bond issue for the construction of a de-hydrating garbage plant, as planned by Commissioner Lafave, has been approved by the Capital Issues Committee. This approval makes it possible to build the plant, in which the Cobwell system of de-hydrating garbage will be used. Priority orders for material must be obtained from the Priorities Commission, according to Mayor Behrman, who will appear before the commission.

Weymouth, Mass.—S. N. Bond & Co., of Boston, were the successful bidders for the 6½ months' loan, \$50,000. John H. Stieson, town treasurer.

Austin, Minn.—Mower County Auditor O. J. Simmons receiving bids Nov. 14 for Judicial Ditch No. 4 bonds, \$34,600.

Cornith, Miss.—W. C. Sweat, attorney of Alcorn county, will receive sealed bids Dec. 3 for \$30,000 court house bonds.

Hackensack, N. J.—James N. Harkness, clerk of the board of freeholders of Bergen county, will receive sealed bids Nov. 25 for \$250,000 36-day tax anticipation notes.

West Hoboken, N. J.—Town Clerk Edward F. Hubener will receive sealed bids Nov. 20 for \$65,000 school bonds.

Niagara Falls, N. Y.—See "Sewerage."

Rochester, N. Y.—City Controller H. D. Quinby will receive sealed bids Nov. 14

for the following 4 months' notes—\$100,000 school and \$100,000 conduit.

Rochester, N. Y.—City has sold the following 4-month notes at 4.60% interest and \$6.50 premium to S. N. Bond & Co., of New York: School, \$100,000; east side sewer, \$20,000; conduit, \$50,000; deepening Genesee River, \$50,000. H. D. Quinley, city comptroller.

Yonkers, N. Y.—Salomon Bros. and Hutzler, of New York, awarded by the city a 6 months' loan to the amount of \$345,000. James J. Lynch, city comptroller.

High Point, N. C.—See "Streets and Roads."

Monroe, N. C.—Bureau Yards and Docks, Navy Dept., Washington, D. C., for building 20 radial brick towers for Naval High Power Radio Station here, receiving bids Nov. 25, Spec. 3600; about \$3,000,000.

Alliance, O.—City has sold to A. E. Aub & Co., of Cincinnati, city's portion of improvement bonds, \$11,500. Chas. O. Silver, city auditor.

Bowling Green, O.—F. W. Toan, clerk of the board of education, will receive sealed bids Nov. 23 for \$25,000 school bonds.

St. Helens, Ore.—City will build a municipal dock at the foot of St. Helens street; bonds to the amount of \$5,000 will be issued to provide for the building. Council has advertised for bids for a 50x70 ft. dock, with a 200-ft. roadway.

Bethlehem, Pa.—The school bond issue passed by a vote of 1,747 to 1,061. The school district will now issue bonds to the value of \$866,000 for the erection of several new public schools and the purchase of land.

Ebensburg, Pa.—The Capital Issues Committee has passed favorably on the sale of 4½% A. & O. tax-exempt Court House Extension bonds to the amount of \$500,000. Authorized by the county commissioners, Cambria Co., last June.

Pierre, S. D.—State Treasurer G. H. Helgeson will receive sealed bids Nov. 22 for \$500,000 4 months' revenue warrants.

Lake Tomahawk, Wis.—Plans have been prepared for the construction of a refectory at the State Tuberculosis Sanatorium to cost approximately \$12,000. Arthur Peabody, Madison, Wis., state architect.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Baltimore, Md.—*West Constr. Co., American Bldg., for extension to quartermaster warehouse No. 3; about \$250,000; cost plus basis. Constr. director, war department, Washington, D. C.

Carlisle, Pa.—*W. Moore Company, Colonial Trust Bldg., Phila., about \$300,000; cost plus basis, for building hospital at Carlisle Indian School. Constr. director, war department, Washington,

Oak Grove, Wis.—*Wisconsin Drainage Co., Reeseville, for drain section 5-4.

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TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Miss.	Hattiesburg	....2 p.m., Dec. 2	Improvement of about 5 mi. of road, involving grading, draining and surfacing	Herbert Gillis, Chancery Clk.
WATER SUPPLY.				
Wash.	Seattle	.....10 a.m., Nov. 22	Construction of a steel water tank (500,000 gal. capacity) and supporting tower for the city waterworks department	City Engr., County-City Bldg.
Mo.	St. Louis	.....noon, Nov. 29	Making excavations, examining, inspecting and cleaning about 486,000 lin. ft. of 6 to 20-in. cast iron water mains	Wm. T. Findly, Secy., Bd. of Pub. Serv.
LIGHTING AND POWER.				
Pa.	Philadelphia	.....Nov. 18	Care and maintenance of 10,050 gasoline lamps throughout the city	Dept. of Pub. Wks.
BRIDGES.				
Miss.	Hattiesburg	....2 p.m., Dec. 2	Constructing bridges in connection with road improvements	Herbert Gillis, Chancery Clk.
MISCELLANEOUS.				
D. C.	Washington	10.30 a.m., Nov. 29	Furnishing equipment for incinerator plant, overhead cranes, etc.	A. L. Flint, Gen. Purch. Agt., Panama Canal, Washington, D. C.
N. Y.	New York	....10 a.m., Nov. 30	Furnishing gasoline, kerosene, lubricating oils and greases for the Army	Quartermaster Corps, U. S. A., 51 Chambers St., N. Y. City.

STREETS AND ROADS.

Moscow, Ida.—Farmers and land owners of Moscow and vicinity are circulating a petition to raise funds for preliminary survey of a state highway from Moscow to and beyond Genesee to connect with the Lewiston Hill highway.

St. Paul, Minn.—Council orders the widening Concord St., between Stickney and Page Sts., to a width of 66 feet.

Raleigh, N. C.—Wake county commissioners have appropriated \$20,000 toward the construction of the improved Raleigh-Cary road. With the \$130,000 available from the Western Wake highway commission through the recent bond issue and \$20,000 from the state highway commission, work will be begun on the road immediately. The road will extend from the Fair Ground entrance where the asphalt stops to the Williams crossing on the Cary road. Engineer C. M. Miller was appointed to co-operate with the Western Wake highway commission and act as engineer in the construction of the road.

Akron, O.—Service Director Morse announces that Medina granite block will be used in repaving S. Main St.

Youngstown, O.—See "Sewerage."

SEWERAGE.

West Point, Neb.—City received no bids for sanitary sewer; 470 ft. of 8-in. clay tile; 470 ft. excavation, laying tile and refilling ditch; one manhole completed and 6 Y's, \$339. C. E. Mead, city clerk.

Youngstown, O.—Service Director William L. Sause announces that the capital issues committee has granted the city permission to dispose of \$18,000 in bonds to be used for city improvements. Of the amount, \$7,500 will be used for sewer repair work and \$10,000 to purchase a new equipment for the fire department and to make repairs. At the same time the committee turned down the city's request for permission to issue \$25,000 in bonds to construct new sidewalks.

Johnstown, Pa.—An ordinance was approved, Nov. 8, for the construction of a sewer in Daniels alley, from its intersection with Adleman alley to a point 240 degrees east of the line east of Pickworth street, in the borough of Dale, Cambria county. J. E. Litsinger, president of council.

Sarnia, Ont.—The construction of tile sewerage system considered by the city council. John A. Baird, engineer.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Philadelphia, Pa.—*Adolph Jafolla, for constructing a main sewer in 69th St., from the sewer terminus at Dicks Ave. to Passyunk Ave., for \$80,000. Director Datesman, of the department of public works.

Philadelphia, Pa.—*J. Joseph McHugh, for constructing a main sewer in Sanger St., from the Delaware river to

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bulkhead line, for \$42,000. Director Datesman, of the department of public works.

WATER SUPPLY.

Defiance, O.—Water mains will undoubtedly be extended to the plant of the Central Rubber Company in East Defiance.

Elyria, O.—Mayor Jones, together with a number of city officials, have been in Cleveland conferring with the secretary of the capital issues committee relative to floating bonds to raise money to make the necessary improvements in the waterworks department, estimated at approximately \$750,000.

Woodfield, O.—Council adopted resolution providing for the issuance \$65,000 bonds to purchase waterworks for supplying water to village. A special election will be held on December 16. L. P. Neuhart, mayor.

LIGHTING AND POWER.

Luray, Kan.—For the installation of a municipal electric light plant preparations are being planned. George H. Wells will have charge of the plant.

Burgin, Ky.—Voters will soon be requested to vote on a proposition to install a municipal electric light plant here. S. D. Ison, city clerk.

Ishpeming, Mich.—Cleveland Cliffs Company, of Ishpeming, are considering plans for the construction of two electric power plants, to be located at its works at Ishpeming and Republic.

Deerwood, Minn.—The Cuyuna Range Power Co. planning to move to Ironton. Company making connections to town of Motley; will install lamps and motors and furnish electricity.

Tutwiler, Miss.—The proposition to issue bonds for the installation of a municipal electric light plant will soon be submitted to the voters.

Seattle, Wash.—The issuance of \$1,755,000 of light and power utility bonds for further extensions of the light and power system, in addition to the \$5,500,000 authorized for the development of the Skagit river power project, is provided for in a bill introduced at the council meeting Nov. 2.

Seattle, Wash.—The P. S. T., L. & P. Co. power station at Seventh Ave. and Jefferson St. was destroyed by fire Oct. 27; total loss, approximately \$100,000.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Appleton, Wis.—Universal Concrete Products Co., Port Washington road, Milwaukee, for concrete posts and brackets for ornamental street lighting system. Consulting engineer, Arthur Sweet, Palace Theatre building, Milwaukee.

FIRE EQUIPMENT.

Youngstown, O.—See "Sewerage."

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Bluefield, W. Va.—Ahrens-Fox Co., of Cincinnati; the White Co., Cleveland, O., and the American LaFrance Co., of Elmira, N. Y., bidders on the combination fire truck and pump.

Denmark, Wis.—Jorgensen Construction Co., for fire house. Denmark Fire Co., Geo. D. Debroux, secretary; 1-sty., 34x44.

BRIDGES.

Seattle, Wash.—A bill was passed by the council authorizing and directing the board of public works to proceed with the construction of approaches to the Eastlake Ave. bridge, and appropriating \$107,000 therefor. Another bill provides for the issuance and sale of the remaining \$245,000 of bonds authorized by vote of the people for the construction of this bridge.

MISCELLANEOUS.

Charles City, Ia.—City will shortly vote on a \$36,000 bond for the purchase Cedar Valley hospital and remodel.

Des Moines, Ia.—R. M. Grant & Co., of



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Chicago, were the successful bidders for the issue of \$490,000 funding bonds.

Ada, Minn.—Nov. 26, Norman county will hear objections against county ditch No. 47. D. E. Fulton, county auditor.

Ada, Minn.—No bids received Oct. 26 for county ditch No. 46; excavating, 17,350 cu. yds., \$2,256; one, 10x12x24, reinforced concrete culvert, \$600; one mile road leveling, \$150, and hauling gravel, \$228. D. E. Fulton, county auditor.

Wooster, O.—The commissioners of Wayne and Holmes counties in joint session in this city approved the original plans for enlarging, deepening and straightening the Killbuck river through Wayne and Holmes counties. The plans were drawn by the surveyors of the two counties. Jan. 7 set as the date for the final hearing, which will be held in this city.

Johnstown, N. Y.—City's \$9,400 bond issue, recently authorized by the common council to provide for the amount lost in excise money, was sold to H. A. Kahler & Co., New York City.

Bluefield, W. Va.—City council appointed a committee to investigate further and visit several incinerator plants with the view to adopting the type best fitted for Bluefield's needs.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Rio, Wis.—Wisconsin Drainage Co., Elkhorn, for drainage ditch, town of Bradley, Columbia county, \$11,500. Nels Mortenson, chairman.

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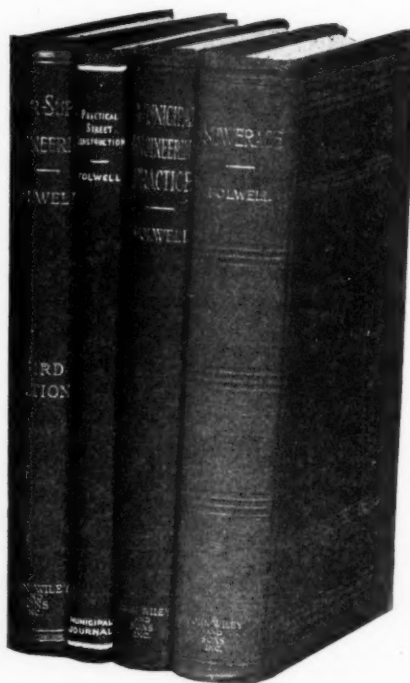
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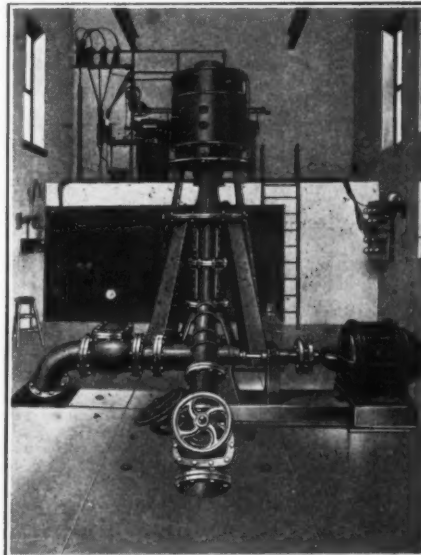
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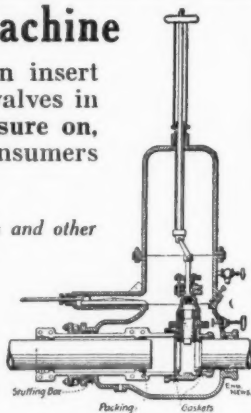
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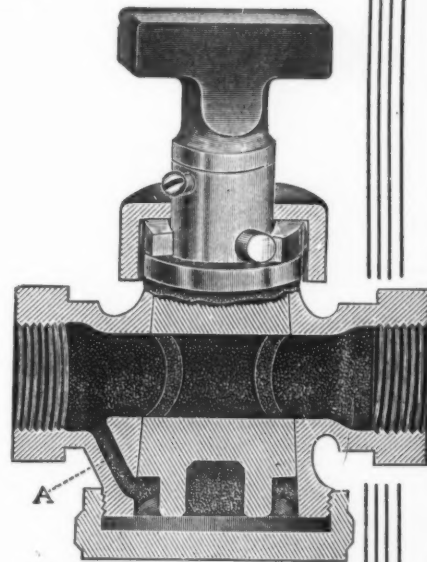
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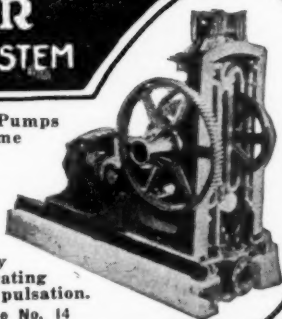
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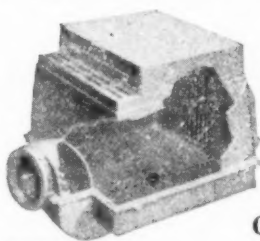
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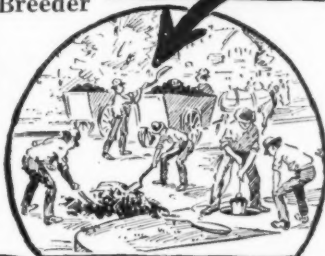


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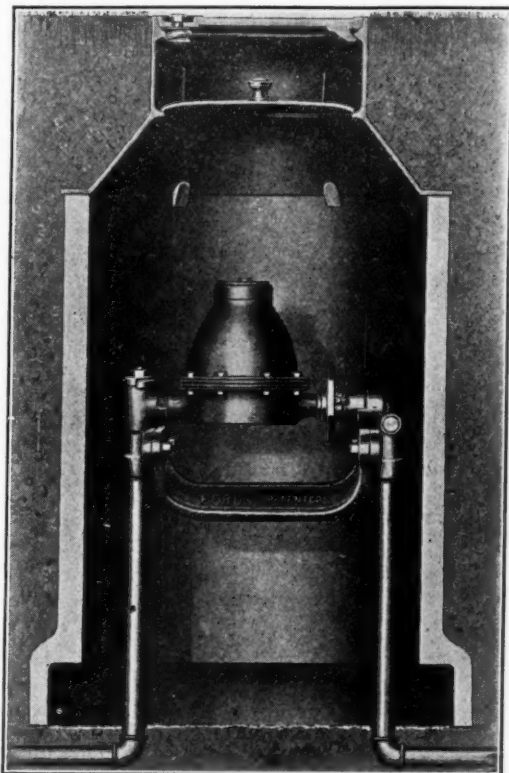
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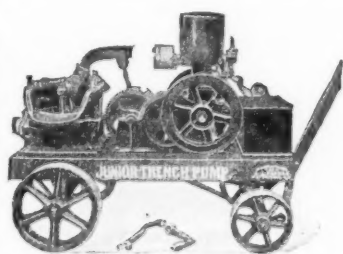
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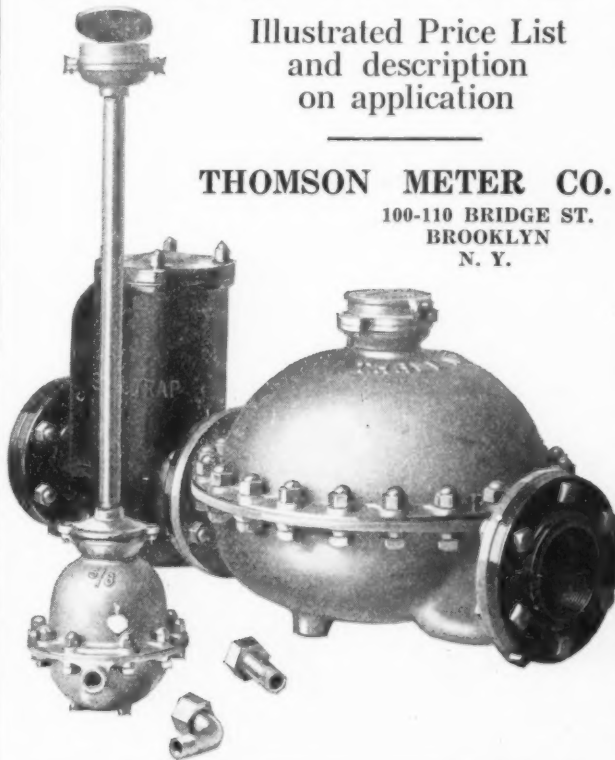
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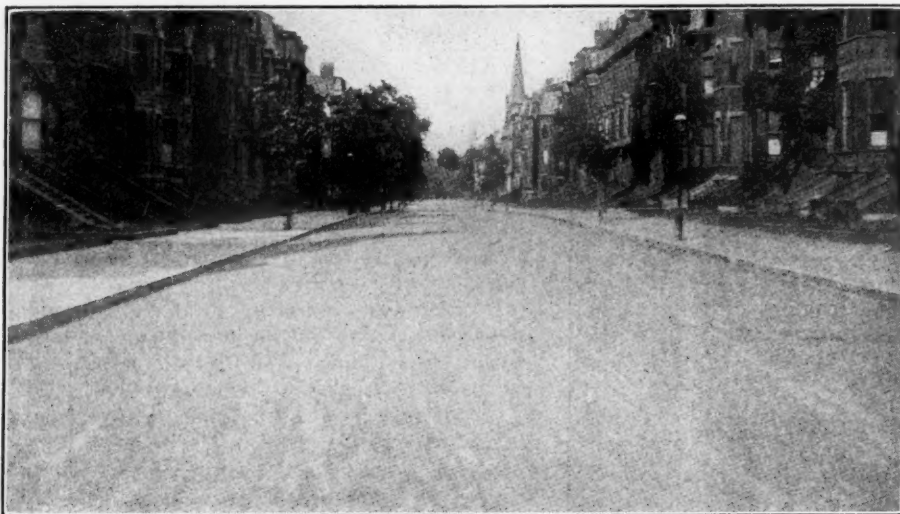
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